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LECTURES
ON
VETERINARY MEDICINE,
DELIVERED IN THE
UNIVERSITY OF LONDON,
BY
MR. YOUATT.

LECTURE XXXI.

CHEST AFFECTIONS IN THE HORSE.

I HAVE hinted at the disadvantage under which the veterinary surgeon labours in his treatment of the diseases of the chest, and particularly in the horse. He must not only subdue the malady, but he must remove all its consequences. *He must leave his patient perfectly sound*, or he has done comparatively nothing. This is a task always difficult, and sometimes impossible to be accomplished. The two most frequent consequences of severe chest affections in the horse—are recognised under the terms *thick-wind* and *broken-wind*. The breathing is hurried in both, and the horse is generally much distressed when put upon his speed; but it is simply quick breathing in the first, with a peculiar sound like *half roaring*; the inspirations and expirations are rapid, forcible, but equal: in the second the breathing is also hurried, but the inspiration does not differ materially from the natural one, while the expiration is difficult, doubly laborious. The changes of structure which accompany these states of morbid respiration, are as opposite as can be imagined. Induration of the substance of the lungs, diminution of the number or the caliber of the air-passages, are the causes of *thick-wind*. If the portion of lung employed is lessened, as the bronchial tubes will not admit so much air, the quick succession of efforts must make up for the diminished effect produced by each. In *broken-wind* there is rupture of the air-cells, there is an unnatural inter-communication between the air-cells in the same lobule, or between those of the neighbouring lobuli. It is no longer, if we may dare so to consider it, a rounded cell with one opening into it, through which the air will easily pass during the expansion or contraction of the cell, but the membrane between the cells being ruptured, a kind of labyrinth is formed, in which the air becomes entangled, and from which it is impossible to force it by a single effort, or even perfectly by the double effort that characterises *broken-wind*. The structure of the lung, and the discharge of function, and the treatment, too, being so different, these diseases require separate consideration.

THICK-WIND.

Hepatisation.—When speaking of pneumonia I observed, that not only are the vessels which ramify over the delicate membrane of the air-cells gorged with blood, but they are sometimes ruptured, and the cells are filled with blood. The black, softened, pulpy appearance of the lung thus produced, is the *rotteness* of the groom and farrier, proving equally the intensity of the inflammation, and that it is of recent date. If the horse is not speedily destroyed by this lesion of the substance of the lungs, the serous portion of the effused blood is absorbed, and the solid becomes organised. The cells are obliterated, and the lung is *hepatised*, or its structure bears considerable resemblance to the parenchyma of the liver. This may occur in patches, or it may involve a considerable portion of the lung.

Effect of this on Respiration.—Now the horse has no lung to spare in the performance even of the ordinary service we require from him, much less under the cruel tasks which we sometimes impose upon him. If, therefore, a portion of the lung is thus rendered impervious, the remainder will have additional work to perform. The same quantity of blood must be supplied; and if the working part of the machine is diminished, it must move with greater velocity as well as force, or the respiration must be quicker and more laborious. This quick and laboured breathing can be detected even when the animal is at rest, and it is indi-

cated plainly enough by his sad distress when he is urged to unusual or continued speed. The inspirations as well as the expirations, are shorter, as well as more violent; the air must be more rapidly admitted and more thoroughly pressed out; and this is accompanied by a peculiar sound. I have called it a half-roaring, that can rarely be mistaken.

Vomicæ.—The healthy structure of the lung is rarely or never restored when the air-cells have been once filled with, and obliterated by, this organised deposit. The hepatisation, however, does not always remain, for the organisation is not complete; it does not perfectly resist various and perhaps slight causes of decomposition, and a softening process usually commences. This deposit, or some portion of it, begins to dissolve. I know not how we are to ascertain the commencement of this change, or to take advantage if we could discover it; the membrane has been compressed, destroyed; the minute ramifications of the pulmonary arteries have been compressed, destroyed; and one uniform mass has resulted, which is now taken up by the absorbents, and instead of the restoration of the primary air-cells, with their mesh-work of innumerable vessels, we have larger or smaller cavities — ulcerations — vomicæ. There are few cases of old hepatisation in which there are not some parts in a state of softening; and the cases are numerous in which the vomicæ have been very extensive, while nothing has indicated their existence. Indeed when we consider that they happen in a part already removed from the function of respiration, and furnished with organic nerves alone, or with few sensitive fibrils, we need not wonder that this secondary change should proceed so far, and we remain perfectly unconscious of it.

Advantage of Auscultation.—This brings me back to a circumstance on which I have already laid much stress—the habitual and anxious recourse to auscultation in every inflammatory affection of the chest. We may guess at the commencement of that congestion which precedes hepatisation, by the laborious heaving of the flanks; but by auscultation alone can we *ascertain* its commencement and progress. The increase of the crepitus will tell us that the mischief is beginning, and the cessation of the murmur will clearly mark out the extent of the congestion.

The inflammatory stage of the disease having passed, and comparative health being restored, and some return to usefulness having been established,—the horse being now *thick-winded*, auscultation will be far more valuable than is generally imagined. It will faithfully indicate the extent of the hepatisation, and so give a clue to the degree of usefulness, or the degree to which we may tax the respiratory system; and it will also serve to distinguish, and that very clearly, between this cause of *thick-wind*, and the morbid changes that may have resulted from bronchitis, or the thickening of the parietes of the air-passages, and not the obliteration of the air-cells. This leads me to the consideration of a second cause of thick-wind.

Thickening of the Lining Membrane of the Bronchiæ.—I have described bronchitis as inflammation of the lining membrane of the bronchial tubes. I need not tell you that one of the tests of inflammation is tumefaction, increased deposition in the substance of the part inflamed. This is peculiarly exemplified in bronchitis; the thickening and the sensibility of the membrane produce in that disease a disturbance in respiration unknown in any other malady, and almost incredible. It will often be found that this unnatural deposition, this thickening of membranes, will not always subside with the subsidence of the inflammation. If that has been intense, and especially if it has not been promptly attacked, the engorgement will long remain materially interfering with the function of the part. The Professor of the Veterinary College, and my valued friend Mr. Percivall, are apparently at issue here; the former attributing thick-wind to effusion into the air-cells, and the latter to a thickening of the membrane lining these cells or the passages to them. The truth of the matter is that they are both right. The effusion and the thickening, and particularly the latter, are causes of thick-wind. The previous disease, when it can be ascertained, will determine to which of the morbid changes of structure the impeded function of respiration is to be attributed.

Auscultation.—If we know nothing of the previous disease, auscultation will generally determine the matter for us. There will be no deficiency of murmur, stillness, at any point, but an increased sound everywhere—a whizzing—a kind of roaring. In some instances, both causes seem to have combined. While there has been thickening of the bronchial membrane, there has been deposit in the air-cells. So far then as *thick-wind* is connected with previous diseases, it is plainly referable to one of these causes, hepatisation of the substance of the lungs, and obliteration of the air-cells, or thickening of the lining membrane, and diminished caliber of the passages leading to these cells. Whether the cells are fewer, or the passages are contracted, a less quantity of air can be admitted to arterialise the blood at each inflation of the chest, and then the act of respiration must be oftener, and consequently more forcibly performed,

and that in proportion to the hepatization or engorgement.

Treatment.—Of this, Gentlemen, I have little to say. I know not by what means I can excite the absorbents to take up the solid organised mass of hepatization, or to restore the membrane of the cells and the minute vessels ramifying over them, now confounded and lost. I have a somewhat better chance, and yet not much, in removing the thickening of the membrane—counter-irritants extensively and perseveringly applied to the external parietes of the chest might do a little. If thick wind immediately followed bronchitis, it would certainly be justifiable practice to blister the brisket and sides, and that repeatedly; and to administer purgatives if we dared, or diuretics, more effectual than the purgatives and always safe.

Food.—Our attention must be principally confined to diet and management. A thick-winded horse should have his full proportion, or rather more than his proportion of corn, and a diminished quantity of less nutritious food, that the stomach might never be overloaded, and press upon the diaphragm, and so upon the lungs, and increase the labour of these already overworked organs. Particular care should be taken that the horse is not worked immediately after a full meal—the overcoming of the pressure and weight of the stomach will be a serious addition to the extra work which the lungs already have to perform from their altered structure.

Exercise.—Something may be done, and more than has been generally supposed, in the palliation of thick-wind, by means of exercise. If the thick-winded horse is put, as it were, into a regular system of training, if he is daily exercised to the fair extent of his power, and without seriously distressing him, his breathing will become freer and deeper, and his wind will materially improve. We shall call to our aid here one of the most powerful excitants of the absorbent system—pressure,—the pressure of the air upon the tube, the pressure of the working part of the lung upon the disorganised; and adjusting this, so as not to excite irritation or inflammation, we may sometimes do wonders. You know, Gentlemen, that this is the very secret of training, and that the power and the durability of the hunter and the racer depend entirely upon this. I may almost say that every untrained horse is, to a certain degree, a thick-winded one; there is either a deposition of adipose or other matter, or there is an indisposition in the parts to accommodate themselves to unusual exertion, and which gradually yields to the habit of exertion pushed to the point which the animal can bear without distress. A thick-winded horse may be seriously injured by being pushed beyond his power; the over-laboured cells or passages may burst from the violent influx of the air, or its forcible expulsion and thick-wind may degenerate into broken-wind; but, on the other hand, the horse is sure to suffer from idleness, for the deposition or thickening will become more confirmed, and the parts will acquire an additional, and perhaps an habitual inaptitude for exertion.

Thick-wind depends on Conformation.—Thick-wind, however, is not always the consequence of disease. There are certain cloddy, round-chested horses, that are naturally thick-winded, at least to this extent,—they are capable of that slow exertion for which nature designed them, but they are immediately distressed and blown, if put ever so little out of their usual pace. A circular chest, whether the horse is large or small, indicates thick-wind. The circular chest is a capacious one, and the lungs which fill it are large, and they supply sufficient arterialised blood to produce plenty of flesh and fat, and these horses are always fat. This is the *point of proof* to which we look, when all that we want from the animal is flesh and fat; but the expanding form of the chest is that for which we look in the animal of speed—the deep as well as the broad chest—always capacious for the purpose of muscular strength, and becoming considerably more so when arterialised blood is more rapidly expended in quick progression. We cannot enlarge the capacity of a circle; and if more blood is to be furnished, that which cannot be done by increase of surface, must be accomplished by frequency of action. Therefore it is that all our heavy draught-horses are thick-winded. It is no detriment to them, for their work is slow; or rather it is an advantage to them, for the circular chest, always at its greatest capacity, enables them to acquire that weight which it is so advantageous for them to throw into the collar.

BROKEN-WIND.

Peculiar Breathing.—This is immediately recognisable by the manner of breathing. The inspiration is performed in somewhat less than the natural time, and with an increased degree of labour; but the expiration has a peculiar difficulty accompanying it—it is accomplished by a double effort, in the first of which, as Mr. Blaine has well explained it, "the usual muscles operate, and in the other the auxiliary muscles, particularly the abdominal, are put on the stretch to complete the expulsion more perfectly, and, that being done, the flank falls, or the abdominal muscles relax with a kind of jerk or spasm."

An aggravated Degree of Thick-wind.—This may proceed from unusually extensive induration or hepatisation of the lungs, or thickening of the bronchial membrane, rendering it a work of this labour to accomplish the expulsion of the air, and another set of muscles gradually associated in the act.

Different Theories of Broken-wind.—The most frequent cause or accompaniment of this breathing is an emphysematous state of the lungs. This, although not precisely a doctrine of modern date in veterinary pathology, has only lately been generally received. Some of the Greek Hippiatrists maintained that it proceeded from ulceration of the lungs, which had been obstructed and filled with dust: and others of them, that it was to be attributed to rupture of the lungs from the concussion they experienced in violent cough. Vegetius attributed it to the dryness of the lung, and the diminution of its volume. The Spanish veterinarians believed that it arose from the bad quality of the blood, and the afflux of humours to the lungs, and also a morbid contraction of the bronchial tubes. The Italians seemed to refer it to ulceration and rupture of the lungs. M. Demoussy traced it to diminution of the caliber, both of the air-cells and the bronchial tubes, from an aneurismatic varicose state of the vessels of the lungs. Vitet attributed it to the introduction of air and of blood into the tissue of the lungs; and Bourgelat, to obstruction of the vessels of the chest, and a vitiated state of the lungs.

Among ourselves, old Bracken artfully entrenched himself by saying, that "broken-wind in horses is what in human creatures we call asthmatic and phthisicky." Blunt traced it to the relaxation and thinness and feebleness of the diaphragm, with an enlarged state of the lungs and heart. Bartlet and Gibson likewise traced it to hypertrophy of the heart. One of Gibson's disciples, Mr. Knowlson, fifty-seven years in full business, enters so thoroughly into the opinion of his predecessor, that I cannot refrain from quoting his version.* "It is frequently owing to the hasty or injudicious feeding of young horses for sale, by which means the growth of the lungs, and all the contents of the chest, are so much enlarged, that in a few years the cavity of the chest is not sufficient to contain them, when they expand themselves to perform their proper function. Horses rising eight years are most subject to it, for at six the horse generally finishes his growth in height, and after that he lets down his belly and spreads, and all his parts gain their full size, so that the pressure upon the lungs and midriff is now increased. Dissections of horses that have died broken-winded, sufficiently prove the truth of the above observations, and in some of them the disproportion of them has been so great, that the heart and lungs have been almost twice their natural size." Horses are very differently constructed now, for we do not find this strange disproportionate bulk of the thoracic viscera, but we *do* find that which these excellent morbid anatomists mistook for hypertrophy, an emphysematous state of the lungs, not admitting of that degree of collapse which the pressure of the atmospheric air would otherwise have occasioned. I once saw a case in which the lungs did not collapse at all on the opening of the chest. The horse had had broken-wind to a most annoying degree.

Origin of the present prevailing Opinion.—The majority of veterinary surgeons attribute broken wind to an emphysematous state of the lungs. In the year 1795, Mr. Coleman was dissecting a mare that had been destroyed on account of inveterate broken wind. Mr. Bracy Clark was standing by, with the pupils of the Veterinary College. The lungs were free from inflammation, and white, and it was considered at first that the lungs were not the seat of disorder; until some one observed a small bladder or vesicle on the outside of the lungs, in the external investing pleuritic coat. It was at first mistaken for a tubercle, but Mr. Clark, suspecting from its appearance that it was not solid, punctured it, and it immediately subsided; and it instantly suggested itself to his mind, that the lungs were in a state of emphysema, or that air was contained in a state of extravasation in their substance. Hence Mr. Clark claims the honour of being the father of the modern theory of broken-wind, and which is now adopted by the English and the French schools. I do not know, however, why Mr. Coleman should not participate in the honour, since he is acknowledged to have suggested at the time, that the extravasation of the air into the substance of the lungs was occasioned by a rupture of the air-cells.

Description of the emphysematous State of the Lungs.—In almost every broken-winded horse whose carcase I have examined, I have found these vesicles or vessels (for some of them have been of considerable magnitude) on the surface of the lung beneath the pleura; and in every case I have been enabled to trace them, or a portion of them, into the substance of the lungs, and communicating with the air-cells beneath. I have also succeeded by gentle and continued pressure in returning a portion of the air again into the lungs, but never in dif-

* Knowlson's Complete Farrier and Horse Doctor, p. 46.

fusing it among the cellular membrane between the pleura and the lung. I was satisfied, therefore, that it was no *extravasation* of air—that it was no gas extricated by any process of decomposition; it was simply dilatation of an air-cell or of some of the air-cells, either appertaining to one lobule or a few contiguous ones. *It was not extravasation into the parenchymatous substance of the lung*, for there was no general pulmonary emphysema; there was no case of emphysema of any other part of the frame; nothing like that inflation of the cellular membrane, more or less extensive, which almost invariably accompanies a puncture into the thorax, wounding the lung, and evidently admitting the air into its parenchymatous substance.

Progress of the Emphysema and Rupture of the Cells.—I have been brought to regard this as the commencement of the morbid change in the air-cells, and taking place at different periods in different parts of the lungs; for I have invariably found some other portions, and more particularly towards the edges of the lobes, where the cells have not been so much dilated, but where they evidently ran into one another. I could there press the air along—no not all over the lobe, but for a little space; sometimes indeed the space of an inch or two, but oftener not beyond one of the lobules into which the lungs are evidently divided; and while I did this there was a crepitating crackling noise, as if I was breaking down the attenuated membrane of other cells. Here we have the true broken cell whence this disease derived its name. This portion of the lung was considerably lighter than the neighbouring ones; and when I cut into it (what I have never been able otherwise to do, although some anatomists speak of it), I have had a distinct view of the separate air-cells, and the termination of the air-tubes, now dilated. If you wish to have proof of this, inflate the lungs of a horse that has had bad broken-wind, and hang them up where there is a thorough draught, so that they may be dried as speedily as possible. Incisions being then made into them, will show the actual state of the cells. I can conceive that broken-wind may proceed from the hepatisation of the lung or thickening of the bronchial membrane, but I have never seen it without this emphysematous state of the lungs, although sometimes existing in so slight a degree that it would have eluded the eye, and was recognizable only by the crackling, when the edges of the lobe were pressed.

Cause.—Broken-wind is preceded or accompanied by cough, a cough perfectly characteristic, and by which the horseman would detect the existence of the disease in the dark. The cough of thick-wind, which I should have noticed before, is a peculiar one; it is short, hollow, yet feeble; the cough of the broken-winded horse is still shorter, cut short, grunting, yet generally followed by a wheeze: and when the animal is suddenly struck or threatened, there is a low grunt, of the same nature, but not so loud as that of roaring. Broken-wind is usually preceded by cough,—that cough becomes chronic—leads on to thick-wind, and there is but a step to broken-wind. It is the consequence of the cough which accompanies catarrh and bronchitis oftener than that or of following pneumonia; and of inflammation and probably thickening of the membrane of the bronchiæ, rather than congestion of the air-cells.

The frequent consequence of Bronchitis.—Laennec, whose illustrations of the diseases of the chest are invaluable to the human surgeon, comes to our assistance, and while describing emphysema of the lungs of the human being, gives us an explication of broken wind, more satisfactory than I have found in any of our veterinary writers. I will endeavour to condense his description. He attributes what he calls dry catarrh "to the partial obstruction of the smaller bronchial tubes, by the swelling of their inner membrane. The muscles of inspiration are numerous and powerful, while expiration is chiefly left to the elasticity of the parts: then it may happen that the air which, during inspiration, had overcome the resistance opposed to its entrance by the tumid state of the membrane, is unable to force its way through the same obstacle during expiration, and remains imprisoned in the cells as it were by a valve. The succeeding inspirations introduce a fresh supply of air, and gradually dilate the cells to a greater or less extent, and if the obstruction is of some continuance, the dilated condition of the cells becomes permanent."

Progress of the Disease.—Then we can easily imagine that they cannot bear any sudden or violent inspiration, or that the continuance of sudden and violent inspirations, and the forcible pressure of more air, will rupture the cells, or that a sudden effort of expiration, as in violent cough, fruitlessly pressing the confined air against the almost obstructed passage, may produce the same effect. A second cell is now involved, and gradually shares in the distention of the first, and becomes ruptured, and the greater part or the whole of the lobule is gradually broken down, and a labyrinth of cells is formed, through which the air can no longer be pressed by the weak mechanism of usual respiration, and scarcely by the aid of the auxiliary muscles of the abdomen causing the second effort.

Peculiarity of Feeding.

Farther Explication of the Disease.—We are now, perhaps, enabled to account for several circumstances attending the disease. The preceding cough, and that of long continuance, is the foundation of the disease, or indicates that irritable state of the bronchial membrane with which chronic tumefaction is almost necessarily associated. Horses that are greedy feeders, that devour large quantities of somewhat nutritious food, or that are worked with a stomach distended by this food, are very subject to broken-wind. There is the pressure of the distended stomach on the diaphragm impeding the motion of the lungs, increasing the stress upon every part, and lacerating the thinned membranes of the distended cells, for the very distention of the cell renders the membrane thin and more easily lacerable. More depends upon the management of the food and exercise than some have been aware of. The post-horse, the coach-horse, and the racer, are comparatively seldom broken-winded; they are fed at stated hours on nutritious food that lies in little compass, and these hours of feeding and of exertion are so arranged, that they seldom work on a full stomach. The agricultural horse is too often fed on the very refuse of the farm, and his hours of feeding and his hours of work are frequently irregular; and the carriage horse, although fed on more nutritious food, is often summoned to work, by his capricious master, the moment his meal is devoured.

A rapid gallop on a full stomach has often produced broken-wind. When the exertion has been rapid and long, I can easily conceive a rupture of the air-cells of the soundest lungs; but I am inclined to believe, that were the history of these cases known, there would be found to have been a gradual preparation for this result; there would have been chronic cough, or more than usually disturbed respiration after exertion, and then it required little more to perfect the mischief. Galloping after drinking has been censured as a cause of broken-wind, yet I cannot think that it is half so dangerous as galloping with a stomach distended by solid food. Old Dr. Grey relates a curious story of a horse having been cured of broken-wind by a brushing gallop after watering. He says that "a certain groom, who had a horse under his care, kept him from drinking for two or three days, giving him all that time as much hay and other provender as he would eat; then he leaped upon his back and rode him to water, where he suffered him to drink his fill: then he clapped spurs to him and galloped full speed till the poor creature fell down for want of breath, and lay some time as if he was dead. As soon as he recovered wind, the groom gave him more water, and galloped him a second time until he fell, and so a third. Well, when the horse had recovered his wind a little, he fell to coughing very much, and by the violence of the shake, cast out of his windpipe and mouth a lump of congealed phlegmatic stuff of a good bigness, after which the gelding was freed from the distemper." The author says he had this from a worthy honest farmer, who had it from the very groom that performed. We, I think, should require better evidence to induce us to believe this story, and many an instance of the success of this treatment to persuade us to adopt it.

Foul Feeding.—It is said that broken-winded horses are foul-feeders, because they devour almost everything that comes in their way, and thus impede the play of the lungs; but there is so much sympathy between the respiratory and digestive systems, that one cannot be much deranged without the other evidently suffering. Flatulence, and a depraved appetite, may be the consequence as well as the cause of broken-wind; and there is no pathological fact of more frequent occurrence than the co-existence of indigestion and flatulence with broken-wind. Flatulence seems so invariable a concomitant of broken-wind, that the old farriers used to think, that by some inexplicable way the air found its way from the lungs to the abdomen, and thence their "holes to let out broken-wind." They used literally to bore a hole near to or above the fundament to give vent to the imprisoned wind. The sphincter muscle was generally divided, and although the trumping ceased, there was such a constant although silent emission of fœtid gas, that the remedy was worse than the disease.

The narrow-chested horse is more subject to broken-wind than the broader and deeper-chested one, for there is not so much room for the lungs to expand when rapid progression requires the full discharge of their function.

Hereditary.—Is broken-wind hereditary? I believe so. I am sure that I have seen cases of it. It may be referred to hereditary conformation, to a narrower chest, and more fragile membrane, and predisposition to take on those inflammatory diseases which end in broken-wind; and the circular chest, which cannot enlarge its capacity when exertion requires it, must render both thick and broken-wind of more probable occurrence.

Treatment.—Is there any cure for broken-wind? What medical skill can repair the broken-down structure of the lungs? Sir John Floyer thought he could cure the *broken-wind* "by a paracentesis in the thorax, for if the external air be admitted, it will com-

press the flatulent tumour; and, through the same hole, a styptic and carminative hydromel may be injected to restore by its stypticity the tone of the membranes, and discuss by its aromatic acrimony the windy spirits or air retained in the lungs." Of about the same value is the recommendation of Mr. Parkinson to feed with hay and corn wetted with chamber-lye; and to pour shot down the throat, "which will drive the bowels so far from the midriff, that the disease will not be discernible." Linseed oil given in large quantities has been extolled as a cure. It may act as a purgative, and so empty the stomach and bowels, and give temporary relief. Mr. Knowlson says, that "two or three cloves of garlic being given in each feed, or three ounces bruised and boiled in a quart of milk and water, and given every morning for a fortnight, has been found very serviceable. So easy a remedy should never be neglected, *for by warming and stimulating the solids, and at the same time dissolving the tenacious juices which choke up the vessels of the lungs, it greatly relieves this complaint.*" Enough of this foolery!

Food.—If we cannot cure, we may in some degree palliate broken-wind; and first of all we must attend carefully to the feeding. The food should lie in little compass,—plenty of oats and little hay—no chaff. Chaff is particularly objectionable, from the rapidity with which it is devoured, and the stomach distended. Water should be given in moderate quantities, and the horse should not be suffered to drink as much as he likes until the day's work is over. Green meat will always be serviceable. Carrots are particularly useful. They are readily digested, and appear to have a peculiarly beneficial effect on the respiratory system.

It is from the want of proper attention to the feeding that many horses become broken-winded, even in the straw-yard. There is little nutriment in the provender which they there find, and to obtain enough for the support of life, they are compelled to keep the stomach constantly full, and pressing upon the lungs. It has been the same when they have been turned out in coarse and innutritive pasturage. Here the stomach was perpetually gorged, and the habitual pressure on the lungs, cramped and confined their action, and inevitably ruptured the cells, when he gambolled with his companions, or was wantonly driven about.

Exercise.—Next in importance stands exercise. The pursive or broken-winded horse should never stand idle in the stable a single day. It is almost incredible how much may be done by attention to food and exercise. There is scarcely a hunt in which there is not a thick or broken-winded horse, that by judicious feeding and training, is enabled to acquit himself very respectably in the field. The broken-winded horse may thus be rendered comfortable to himself, and no great nuisance to his owner,—but inattention to feeding, or one hard journey—the animal unprepared, and the stomach full,—may bring on inflammation, congestion, and death. Occasional physic, or alterative medicine, will often give considerable relief.

ST. GEORGE'S HOSPITAL.

CLINICAL LECTURE

BY

MR. BRODIE,

Delivered March 24th, 1832.

LIGATURE OF THE EXTERNAL ILIAC.

Pulsating Tumours not always Aneurismal.—Secondary Aneurismal Hemorrhage.

GENTLEMEN,—The case of Batchelor (the man on whom I operated for aneurism on the 1st of this month) is a very interesting one; I shall therefore make a few remarks to you upon it to-day. He was an innkeeper at Windsor, and was sent here by Mr. O'Reiliy, who thought the man's case was a formidable one, in which he was perfectly correct. He was admitted with a large pulsating tumour in the groin, in the situation of the line of the femoral artery, and you know that pulsating tumours in the groin usually denote aneurism. There were, however, some circumstances in this case which led me to doubt the fact of the tumour being aneurismal. It had existed for a long time, and fourteen months ago it first began to pulsate. After a time the pulsations ceased, and then they came on again. The history of the case altogether did not resemble one of aneurism; but if it be decided that this pulsating tumour was not an aneurism—why then what was it? Oh, but the cellular membrane around an artery may be inflamed, thickened, and infiltrated, and the pulsations of it may be mistaken for those of an aneurism. There was a case some time ago in this hospital, which was supposed to be an aneurism—there was a large tumour in the thigh; but, on examination, I found that the patient had had disease of the hip-joint, and that the swelling had extended down around the coats of the artery, which had caused this pulsating tumour.

Solid tumours may pulsate sometimes. These are either medullary tumours, or tumours of fungus hematodes; these latter ones you know are vascular, and have much blood running to them, and they pulsate;

and if any very considerable artery supplying these tumours gives way and bursts, there is a cavity, and an aneurismal swelling formed, and, consequently, a pulsating tumour, but by attending carefully to the history of the symptoms, you may often distinguish very clearly between a pulsating tumour which is an aneurism, and one which is not an aneurism. If a tumour exists before pulsation comes on—if you can diminish the size of the tumour, but not completely—if there is no whizzing sound denoting the rush of blood into a cavity, *then it is not an aneurism.* If you apply your ear to a fungous tumour, there is not the same sound given to it as in an aneurism, and in doubtful cases you may learn much by applying the ear, or the stethoscope, over the tumour. I had a patient in this hospital who had a large pulsating tumour of the abdomen, which I and the house-surgeon believed to be an aneurism. We made a very careful examination, and were fully satisfied that it was one, but every one else who examined it differed in opinion from us; the stethoscope had however just at that time been introduced into this country, and we applied it to the patient's abdomen, and no one did for a moment after that doubt the tumour being an aneurismal one. The patient died, and on opening the body after death, a large aneurism of the great iliac artery was discovered. You may sometimes distinguish these real aneurisms from false ones; this, in some cases, is easy; in others, however, it is very difficult and intricate. I knew of a case where the femoral artery was tied in a supposed case of aneurism. The tumour was found to be one of fungus hematodes; the surgeon who operated in this case was nevertheless a very clever and skilful man. A case occurred in the Asylum for the Recovery of Health, where there was a tumour in the upper part of the thigh. Mr. Keate and I examined it very accurately, and I tied the femoral artery; it proved to be a medullary tumour, and not an aneurism. In this case, both Mr. Keate and I had paid the greatest attention to the case; yet we were deceived. A case was sent up to London (which I saw) by a very clever man who was surgeon to a very large hospital in the country. The patient had a pulsating tumour in the neck, which was supposed to be an aneurism of a carotid artery. I saw her, and I pronounced the tumour to be an aneurism. Sir Astley Cooper saw her also, and he decided that it was an aneurism. Every other surgeon in London, however, who saw the case, said that it was not aneurism. The patient very wisely believed them, and would not be operated upon. She left London, and went down again into the country, and this case eventually turned out not to be a case of aneurism. Such cases as these, however, are of rare occurrence. I merely mention them, in order to show that you are not to jump to the conclusion that a tumour is aneurismal, because it pulsates. In this case, whether the tumour was one of aneurism or not, it would bleed; if it were medullary it would bleed, somewhat slower to be sure, but not the less fatally for that. Of whatever nature however the tumour might be, it was highly necessary that some operation or other should be performed upon it. I was doubtful about the tumour, not about the point of practice.

Well, now, of the operation. As the man was placed on the operation table, the thin skin covering the tumour broke, and a jet of scarlet arterial blood issued from the orifice. Mr. Keate held a sponge, dipped in cold water, over the tumour during the performance of the operation, and all further bleeding was thus checked. The tumour was a larger one than I had ever seen in an inguinal aneurism. The trunk of the iliac artery was never tied in this country until the beginning of the present century. Mr. Hunter was the first to propose this operation in this country. Mr. Abernethy was the first who tied the external iliac artery in inguinal aneurism; it was considered a great exploit in surgery. The patient, however, died from some accidental cause not at all connected with the operation. Mr. Abernethy was not, however, disheartened by the result. "Oh," said he, "I will perform the operation again." He did so, and again the patient died. In this latter case there was inflammation of the cellular texture around the artery; and it was difficult, therefore, to apply the ligature. "But the limb was nourished," said Mr. Abernethy, "and the operation will therefore succeed." The third operation which he performed did succeed, and the patient was cured. I have performed the operation now myself three times with success; and in the case before us, I hope I may add with success also. The external iliac artery gives off no branches until it reaches Poupart's ligament, and, therefore, you may tie it with a greater chance of success than you can the femoral artery, where you are not sure but that a small arterial branch may be given off just about the ligature, thus preventing the formation of a long coagulum, which is necessary to perfect the cure of aneurism, and to plug up the artery. Mr. Abernethy's method of performing the operation was, to divide the abdominal muscles high up, and to push the peritoneum inwards from the artery. Sir Astley Cooper, however, divides the muscles lower down, and pushes up the peritoneum. In one patient, on whom I have operated, ac-

cording to Mr. Abernethy's method, a ventral hernia occurred. Whatever difference of opinion may exist with regard to the two methods of performing the operation in these cases, there was no doubt whatever in this case but that the tumour was situated above Poupart's ligament, and I therefore performed the operation according to Mr. Abernethy's method. I made the incision high up; lest I should have to tie the trunk of the great, as well as the external, iliac. I cut the abdominal muscles singly or doubly, according as they lay; I separated the peritoneum, traced the iliacus internus muscle, up to the psoas magnus, and found the artery pushed down into the pelvis, from the bulk of the tumour and from the skin being so much elevated. I was obliged to make a fresh incision, and carry it inwards over the tumour. I reached the artery, and passed an aneurismal needle under it, drew the ligature tight, and tied the vessel. This part of the operation requires great care, from the neighbourhood of the iliac vein, which, if you were so unfortunate as to wound, would prove fatal to your patient from excessive hemorrhage. In this case the cellular membrane around the artery was not inflamed; and I had not, therefore, the same difficulty to contend with that Mr. Abernethy had, and it only required care and caution. The artery should be detached as little as possible from the surrounding parts, for much of the subsequent danger to the patient depends upon this. Sir Everard Home, who followed Mr. Hunter's method of performing the operation, never separated the artery from the surrounding substance more than he could help, and this plan has been followed universally ever since the publication of Dr. Jones's experiments. If you separate the artery much from the surrounding cellular substance, ulceration and sloughing may come on; and in cases where the old surgeons used to lift up the trunk of the artery on the handle of the scalpel, and show it to the pupils, they, of course, separated the artery very much from the surrounding textures, and ulceration and sloughing were invariably the result. Mr. Cline, senior, used to include a piece of cork in the ligature. Scarpa, I think, recommends a bolster for the same purpose. In the present day, as you know, nothing of this kind is done, for the artery is separated from the surrounding parts as little as possible. The ligature should not be too broad, but of such size and strength as, when drawn tightly, will cut through the inner coat, and you then of course bring together two cut surfaces. The surgical course of lectures which is delivered here in the evening will inform you upon all these points more at length than I can do in the present lecture; and I may also at the same time refer you to Dr. Jones's work on the subject. In this case when the ligature was tied, all pulsation in the aneurismal tumour ceased immediately, and the hemorrhage stopped also. The ligature was tied between the origin of the external iliac and Poupart's ligament. The patient was not purged as he ought to have been before the operation, for he was not in the house long enough.

From the time of the operation the tumour decreased in size; the ligature came away on the sixteenth day. It might have come away sooner, but I did not pull it, as I was fearful of hemorrhage; and when it did come away it required no force to detach it. The only other interesting facts connected with the case are those which occurred to the tumour after the operation. On the 10th March, the coagulum of the tumour turned out, and excessive hemorrhage came on from the lower part of the tumour. I did not think that the anastomosis of the epigastric and circumflexa ilii arteries could bring it on. But was I to apply a ligature in this case? There was a confused mass of bloody slough and hemorrhage; and in the midst of all this, I could not tell where to tie the artery. I thought the hemorrhage might be restrained by pressure. In some private cases which I had, and in which secondary hemorrhage came on, I applied strips of adhesive plaster all round the thigh, with a compress over the surface whence the hemorrhage took place. In this case I began from the knee, and laid on strips of adhesive plaster all round the thigh up to the groin, and placed a bolster over the tumour; this was done ten days ago; no recurrence of the hemorrhage or sloughing has taken place since, and good healthy granulations are now springing up, which I am in hopes will stop up the orifice of the bleeding vessel, and prevent any recurrence of the hemorrhage—at all events it seems now completely under control. For my other patients I had a leather strap made, with a pad affixed to it to press over the tumour which could command and control the hemorrhage in an instant. I have had one applied on this man, but have not had occasion to use it. And here let me observe upon hemorrhage from aneurism, that I have seen many cases of it. In one case I tied the artery above, and still the hemorrhage continued, and the patient died. You will, in general, find that slight pressure will be sufficient to restrain it. In a case of aneurism which occurred in this hospital, Sir Everard Home tied the artery, and secondary hemorrhage came on. However, there was an old nurse at that time in the hospital, who, from long experience, understood these matters, and she tied a piece of tape around the limb, and the

hemorrhage completely stopped. In a case of amputation I tied the vessels and cut off the ends of the ligature, and the wound united by the first intention. On the tenth day it burst, and secondary hemorrhage came on. I put on a roller and bandage, and it completely stopped. In this case the hemorrhage completely ceased. The hemorrhage did not arise from the ligature, but from the aneurismal sac. I never knew this to happen but once before, and then there was an abscess in the sac; here perhaps it was better that the hemorrhage took place from the sac (although I should have preferred that it had not taken place at all) than from the ligature, as it would not have been practicable to apply either pressure or a ligature higher up. I hope there will be no further return of the hemorrhage, but still the man is not yet out of the wood,—not totally free from danger.

REMARKS

ON THE

INVESTIGATIONS AND ALLEGED DISCOVERIES

OF

PROFESSOR DELPECH,

IN THE PATHOLOGICAL ANATOMY OF THE

MALIGNANT CHOLERA.

By J. Waters, Esq., Licentiate of the College of Surgeons in Ireland.

As there has been a considerable degree of attention excited by the statements lately published by Professor Delpech on the pathological anatomy of cholera, I beg leave to state a few facts connected with his investigations in Glasgow, which I had an opportunity of witnessing.

Shortly after the disease appeared in Glasgow, Professor Delpech arrived, his mind being occupied by a preconcerted ingenious theory, determined to make all appearances in the dead body coincide with his views. Completely blind to any changes of structure which could at all militate against them, he immediately commenced by most ingenious and plausible arguments to convince those with whom he had an opportunity of conversing, of the correctness of his idea of the proximate cause of the disease—viz. that it consisted in an inflammation of the ganglionic portion of the nervous system, producing derangements of the functions of sanguification, nutrition, respiration, and circulation.

I was first inclined to coincide with his view of the disease, supported as it was by all his wonted talent and ingenuity, and corroborated as he said by appearances after death, indicative of such an affection of the ganglia, but unfortunately for the validity of his speculations, an opportunity at the moment existed in the hospital, of referring the matter to the test of inspection.

Upon examining the body of a woman who had died a few hours previous, the following appearances were found:—

On removing the calvarium, the superficial vessels of the brain and its membranes were found quite empty; even at the posterior part they were free from the usual congestion from gravitation. The surface of the serous membrane was quite destitute of moisture throughout its whole extent. The substance of the brain was perfectly healthy. The spinal marrow unaltered.

On examining the ganglionic apparatus, more particularly the semilunar ganglia, solar plexus, and splanchnic nerves, to the eyes of Professor Delpech they presented "an intense degree of vascularity, thickening of their neurilema, and tumidity of their substance," the whole indicating a high degree of inflammation, quite sufficient to account for the death of the patient, "on account of the delicate and easily destructible texture of the organs concerned."

I should feel considerable diffidence in taking upon myself to contradict the statements of an individual so eminent in his profession as Professor Delpech, did I not think myself quite competent to form an opinion as to the state of those parts, from having had for some years very extensive opportunities of pursuing post-mortem investigations, and acquiring a perfect familiarity with the natural appearance of the organs in question. I can therefore with confidence assert, that there was not the slightest deviation from their natural healthy structure. The ganglia presented their usual pale, fleshy, appearance, and on being cut into, no blood or fluid of any kind could be expressed from them. The neurilema was perfectly free from any increased vascularity or thickening, and when wiped with a dry towel, was perfectly white, and destitute of the inflammatory blush ascribed to it by Professor Delpech.

The mucous membrane of the stomach and intestines, however, presented more decided and characteristic appearances. In the stomach the vascularity was not much increased, but the membrane was reduced to a state of pulpy softness, having lost all its usual tenacity. In the duodenum the membrane commenced acquiring an increased degree of vascularity, which gradually became more intense as it proceeded

towards the ileum, in which latter situation it presented a dark-red ecchymosed appearance. In the large intestine there were irregular patches of ecchymosis along the course of the muscular fibres. The bladder was empty, and firmly contracted, as is usually found; spleen small, flaccid, and not containing any blood; liver healthy; the large blood-vessels full of dark coagulated blood; gall-bladder full of bile.

On the mucous membrane of the intestine being shown to Professor Delpech, he pushed it from him, remarking that it was a mere complication of the disease, and wholly dependent on the deranged functions of the ganglionic system.

In the other cases enumerated by Professor Delpech, I assisted at all the examinations, and can positively assert that in no case, so far as I could perceive, was there the slightest deviation from the normal appearance and structure of the ganglia and nerves inspected.

The degree of cerebral congestion varied in the different cases, but was not intense in any. In all there was more or less softening, and increased vascularity of the mucous membrane of the stomach and intestines; the bladder firmly contracted and empty; liver healthy, and gall-bladder full of very dark bile. There was also in each case an immense accumulation of blood in the large veins in the neighbourhood of the heart, in the auricle and ventricle of the right side, and extending into the branches of the pulmonary artery. It was coagulated, and closely resembled black-currant jelly, and appeared as if it were moulded to the shape of the parts in which it was lodged.

Since the examinations above alluded to were made, I have had opportunities of pursuing the subject on an extensive scale, and I have not in any one instance found the views of Professor Delpech substantiated.

In all the bodies which were examined at the Glasgow Cholera Hospital, there has been found a most unusual exemption from any chronic morbid alteration of structure in the lungs. In upwards of 80 inspections, there was but one instance found of tubercles, while in the medical and surgical hospitals of that city, on examining the bodies of patients who have died of the different diseases incidental to so large and dense a population, there are found in a very large proportion of cases, tubercles in their different stages of advancement. There was but one case of cholera occurring in a subject of phthisical diathesis, although the latter is particularly prevalent there.

In endeavouring to harmonize (if I may term it) his theory with the progress of the symptoms, he has completely perverted the order of invasion of the latter. He commences by stating, that a fixed pain in the situation of the semilunar ganglia and solar plexus, always precedes the manifestation of other symptoms. The diminution of the circulation next succeeds, no evacuation as yet having taken place, and the blood being still entire, next in order follows, according to his statement, the increased discharge from the stomach and bowels.

That such is not the order of invasion must be obvious to any one who has had an opportunity of observing the disease since its appearance in England.

The disease is invariably preceded by diarrhœa, of certain duration, existing without any pain or uneasiness, being unaccompanied even by the usual griping pain which attends diarrhœa under ordinary circumstances. During this diarrhœa the pulse is not diminished in strength; the respiration is unaffected, and the secretion of urine continues as usual; the temperature of the body is as yet unaltered, there is no spasm, no uneasiness at the epigastrium, as described by Professor Delpech, in fact no pain, or any other symptom which can possibly warrant us in supposing an unnatural condition of the ganglionary apparatus to exist.

We find the blood after death accumulated in the large vessels, to which alone it had found access, and principally in the pulmonary artery and its branches, so far as its viscidity would allow it to advance; and, corroborating this view, we find in the consecutive fever which nature establishes, as it were to rouse the system from the collapsed state, that one of the most marked symptoms is violent and inordinate action of the right side of the heart, evidently owing to its exertions to overcome the obstruction which exists to the passage of the blood, the vessels being clogged by blood previously deprived of its fluidity, and preventing the circulation of that which has now recovered the fluid it had before lost.

The indication of the proper mode of treatment to which this view would lead, seems to be the checking, by means of astringent medicines, the increased discharge from the mucous membrane of the stomach and intestines; at the same time to allow the patient a plentiful supply of fluids, which will greatly alleviate his sufferings as well as contribute towards his recovery. As an astringent in such cases, no medicine can be found more efficacious than sulphate of copper, combined, if necessary, with opium. I have seen it completely put a stop to the discharges after a few doses had been administered, in cases where opium, both alone and in combination with the vegetable astringents, has failed even in checking the

evacuations. I have also known it to succeed where acetate of lead had been exhibited without success. It should be given in similar doses to those recommended by Dr. Elliotson in the treatment of chronic diarrhœa. Tepid water acidulated with lemon juice should be allowed the patient, ad libitum. In addition, the usual methods of keeping up the external heat should be resorted to, and particular attention paid to the temperature of the apartment, which should never be allowed to sink below 70° F.

Parsonstown, May 6th, 1832.

SKETCH

OF THE

ORIGIN, PROGRESS, CAUSES, SYMPTOMS, TREATMENT, AND POST-MORTEM APPEARANCES, OF THE

CHOLERA IN PARIS.

To the Editor of THE LANCET.

SIR,—I transmit to you the observations which I have made on cholera since its appearance in this city. I have not advanced a single fact unauthenticated; I have hazarded no theory; I am attached to no particular dogma. I have not, therefore, enlisted physiological or pathological characters in the confirmation of favourite opinions. I simply submit the most remarkable circumstances, and the most striking results of the therapeutic agents employed, in order that medical men, by the comparison, and by the accumulation of proved inductions and general testimony, may exercise their unprejudiced judgment in the employment of the most rational and most efficacious remedies. If you consider that this parallel between the French and English mode of treatment is unnecessary, or that the difference is so slight, so undefined, that the publication of my paper would be productive of no beneficial result, I request you not to occupy the pages of your valuable journal with it. I am, Sir,

JORDAN R. LYNCH, M.D.

64, Rue St. Andre des Arts,
Paris, May, 1832.

Cholera made its first appearance in France, at Paris, on the 26th March, among the poorest and most distressed portion of the inhabitants, none of whom seemed to have had any communication with persons arrived from England, or any other country, as the patients resided in a part of the city little frequented by foreigners.

Notwithstanding that the disease did not appear to be propagated by contagion in the first instance, in no house in which it appeared was it confined to one individual, but in all cases attacked many. It was a fact remarked by all the medical attendants, that when a medical man's services were required to-day, he might rely on having one, two, or three, to-morrow added to his list.

This circumstance led many to infer, that cholera was more or less contagious, but those who entertained a contrary opinion endeavoured to account for it by the moral predisposition of people residing in the same house, who were terrified at the sight of the ghastly disease. I shall cite one striking example, that of a distinguished person, the Neapolitan ambassador, Prince Castaglioni, a bigoted and cruel aristocrat, who was in the habit of daily tracing on the map of Europe the progress of cholera for the last eighteen months, and sent every week for his physician to indicate its march. He was continually employed in calculating on its fearful arrival in France. His guilty conscience saw in it the avenger of the murdered Italian patriots. As soon as it broke out he sent in consternation for his attendant. Next day he was attacked with diarrhœa, which was succeeded by an attack of cholera which it was impossible to arrest. In most cases the exciting causes were moral affections of different kinds, viz. love, passion, dread of cholera, losses in commerce, play, indulgence in venery, too unremitting application to study, of both of which latter instances the French students afforded melancholy examples; also drunkenness, in which cases they were frequently attacked without any precursory symptoms; inflammation and derangements of the intestines; the ascescent, the vegetable, and the weak diet, to which cause I attribute the greater ravages that were witnessed in Paris than in London, which opinion is confirmed by this fact, that many medical students who had resided for two or three years in France, were carried off, while those who had arrived within the last six or eight months from England, Ireland, and Scotland, were not seriously affected.

All these were considered predisposing causes; but, on the other hand, I have seen those attacked who resided in different *étages*, in different families, whose profession in life, circumstances, age, and residence in the same house, were different, and who were uninfluenced by strong moral causes.

The symptoms were, digestive derangement, existing for two or three days, more or less grave, sometimes so slight as not to have fixed attention, and the neglect of which ended in diarrhœa, one time ceasing then recurring, without any other phenomena than general debility, sensation of oppression,

nausea, cardialgia, frequent vomitings, evacuations, presenting two different aspects; 1st, a transparent liquid, with slight yellow tint, at the bottom of which gelatino-albuminous flakes; 2nd, a liquid thicker, whiter, tinged with blood or bile; odour not very disagreeable; acescent.

After the invasion the grave symptoms came on more or less rapidly; very variable coldness of the extremities, then of the trunk; the circulation, which from commencement was diminished, became imperceptible; in many cases ceasing altogether, and first of all in the extremities. Action of the heart almost indistinct; the colour of skin in the bilious and dark-complexioned becomes blue; black in the fair; and in the leuco-phlegmatic dark yellow. In the former, or where it is in the worst form, the skin becomes of a leaden hue, then a marked blue; of this description, at the commencement, 10 out of 100 were not saved.

All the above were modified by different degrees of intensity. If not terminated by death, they were followed by the second period, that of reaction, characterized by a return of heat. In the former period there is a suspension of almost all the functions.

The indications that arise from its study are so positive, that there can be no doubt of the diagnostic means to be employed. One hundred cholera patients during the first period of the disease, offer the same principal features in different degrees; whereas in the second period the characteristics are more equivocal, and the shades of diversity more numerous. Sometimes the vomiting ceases suddenly, in general gradually succeeded by frequent emission of gas per anum, and hiccough; the diarrhœa follows the same course, and ends, sometimes, in a constipation, not the effect of the medicines administered. The appearance of the urine is variable, extending from two to five days. It is not in every instance an infallibly happy prognostic.

This is the mildest form of reaction; it has been divided into four kinds, typhoid, ataxic, adynamic, and inflammatory; the last should be placed second, from its relative degree of frequency, from its importance, from the polemical disquisitions to which it has given rise. The study of this stage, I think, most easy. Nature seems as if to throw off the incubus of incipient death; she excites herself; she rallies from the state of general atrophy. At this period all the profundity of the skilful physician is required to adapt his succour to the powers of the constitution; here, specifics, favourite remedies, resolve themselves into charlatanism. This is frequently followed by perspiration, which lasts some days, at the end of which, sometimes, the organs resume their functions; but the termination is rarely so favourable. This, like the others, is subject to the greatest variety; the transition to heat is the leading mark; it is in general gradual, imperceptible in shades, approaching more or less the typhoid character; heat inconsiderable; pulse small, feeble; vomitings tinged with bile; phlogosities of lips and tongue; tenderness of epigastrium; more or less stupor; prostration great; integrity of intelligence. If these continue, life extinguishes like a candle. In other cases, excitement; thirst; violent reaction, too violent for the strength of constitution; inflammatory type, *en resume*.

I will submit, without comment, the comparative efficacy of the remedies adopted, with their results.

At *l'Hotel-Dieu*, entered from 26th March to 23d April, 1920; died 1161; in which hospital the treatment was greatly diversified.

Baron Dupuytren tried, first, superacetate of lead and cautery, without effect; latterly, he used strong tea, ammonia, laudanum, and occasionally bleedings.

MM. Magendie and Petit applied alcohol ʒi; ol. terebinth. ferrum calidum dorso. M. Honore, sulph. æther, malaga wine. Bally, sulph. quinine, ol. tiglium.

At the *Pitie*, MM. Andral, Louis, Lisfranc, and Velpeau, almost the same. Here ipecacuanha, latterly, with benefit. From 29th March to 14th April, entered 592; dead 313.

At *Val de Grace*; under the service of Broussais, who considers it a gastro-enterite, and subjected it accordingly to what he calls physiological treatment, bleeding, antiphlogistics; but he was obliged (to use his own words) to have recourse to the dangerously stimulant treatment. From 29th March to 26th April 127 sick; cured 24; dead 51; remaining 52.

St. Louis. M. Alibert; ipecacuanha; in commencement 18 grains; sulph. quinine; application of leeches to epigastrium; administration of ice during the thirst. From 29th March to 26th April, entered 233; cured 80; died 81; remaining 57.

The same treatment has been approved of in Hungary. Bleeding there, as well as in Podolia, has not answered their expectations. In Hungary, in a population of nine millions and ½ half, 25,000 attacked, half dead.

In attendance at the arrondissement to which I was attached, when we bled we generally lost our patients. The change was marked by the adoption of that mode of treatment. The *convalescence* was grave; a relapse fatal; progress tedious; orbital excavation

remained for at least fifteen days. On the 9th of April, dead in domiciles and hospitals 1020; on 10th, 985 dead; 11th, 850 dead; 12th, 863; 13th, 785. From this time it daily and rapidly decreased. The severity mitigated up to this. They seemed devoted before to certain death. On the 15th, the sources of life seemed less compromised; pulse more perceptible. On the 23d only 105 attacked; on the 24th 81 attacked; 25th 62; 27th 71; and then on, gradually lessening. Galvanism, protoxyde of azote, oxygenated water, powdered charcoal, calomel and opium, arteriotomy, general bleeding, counter-irritation, produced little or no happy effect.

Post mortems.—The inductions from this source have not established any decided fact. The leading characters are the same as lately described by Dr. Green in THE LANCET. Equivocal appearances presented in one case, have not been found in another, and their absence or presence, backed by ingenious conjectures and plausible reasonings, have caused the broaching of many fanciful theories, and the physical cause of the disease rests in the same impenetrable obscurity. I will only notice a few appearances at variance with those generally found. Serous effusion in brain; generally healthy spleen, small, without blood; generally gorged intestines; dark appearance of inflammation, generally congested, without redness; mesenteric ramifications enlarged, in general much smaller. Semilunar ganglia in two or three instances, traces of inflammation; generally natural; glands of Peyer, unenlarged, uninflamed; vascular patches in general developed as in typhus fever about the 10th day. Kidneys natural, in general congested; bladder always contracted.

APPEARANCE OF THE

CHOLERA IN LIVERPOOL.

To the Editor of THE LANCET.

SIR,—The cholera, the malignant, the Asiatic cholera, has now beyond all dispute made its appearance in Liverpool, and our Board of Health, in spite of some misgivings, no longer doubt it; but the evincing of, and the perverse adherence to, a sceptical spirit in the belief of its existence, seems to be inseparable from its presence everywhere; at least such has been the case in all places which have been visited by this pestilence in England. It was not to be supposed that Liverpool would be singular in this; hence, the cry of "*No cholera*," "*We have no cholera*," was to be heard everywhere, from the rising of the sun to the setting thereof; it was raised by the *faculty* and echoed by the populace, and up to the present moment this false, preposterous, absurd, dangerous report, is perseveringly propagated and encouraged.

The following account of five cases of cholera which have occurred in my own practice since Monday last, 14th instant, is condensed from my note-book. The evidence they afford is to the point, and very convincing, and establishes pretty clearly two things, 1st, That the cholera of Asia has commenced its ravages in Liverpool, and, 2dly, That this disease *is* contagious, relatively considered.

CASE 1.—*Samuel Prince*, iron-founder, aged 30 years, rather stout and robust, residing in Union Place, Lower Chisenhale Street, Liverpool, was seized with cramps, vomiting, and purging, at eleven o'clock on Sunday evening, 13th instant, but had been troubled with a diarrhœa the whole of that and the preceding day. Did not see him before nine o'clock next morning; vomiting and purging were then severe and almost incessant; great prostration of strength; countenance fallen, intensely anxious and dejected—a true picture of horror and dismay; pulse slow, and almost imperceptible; skin without the least moisture, but not harsh, soft, cold, conveying to the touch that peculiar feel which is given from a human body some two or three hours after life has become extinct, or in that state when the animal heat is almost entirely confined to the heart and internal parts. Face, neck, and the upper and lower extremities, of a distinct blue colour. Respiration laborious and hurried; tongue covered with a dense white coat, and the breath nearly as cold as the skin; the matter vomited was exactly similar in consistence and colour to that which had passed through the intestinal canal, very thin, and of a palish white, not the least offensive, and nearly inodorous, and on standing a few minutes, deposited a flakey sediment, closely resembling the grounds of white wine posset. Urine suppressed. Complained of acute pain over the region of the liver, and along the margin of the ribs—a feeling of stricture; stomach and bowels slightly tender, and not particularly painful on moderate pressure. Head not materially affected, but he frequently called out for some cotton-wool to be put into his ears; this being done, he observed his hearing was more distinct; the whizzing and clashing sounds subsided immediately; thirst intolerable; preferred cold water as a drink to any other fluid. With such prognosis before me I could not mistake the nature of the disease.

If the treatment of a solitary instance in any disease can be brought forward with recommendations of sufficient moment to entitle it to general adoption, that which was exclusively followed in the above case of cholera, claims no small share of attention. Subm. hydr. gr. x, opii gr. j, and carb. sodæ gr. xx, were administered to him immediately; the dose to be repeated every third hour. The whole body was fomented and well rubbed with hot water, very hot water, saturated with common table salt. Thus treated for a few hours, the patient became sensibly better, and at six o'clock, same evening, nineteen hours from the attack, he was so far recovered as to be apparently out of danger. To-day he is down-stairs, and wishes much to walk into the open air.

Case 2.—*Mary Rennard*, 53 years old, a strong, jolly-looking woman, had been one night and two days in attendance upon Prince; was seized suddenly with severe cramps in her extremities at three p.m. on the 16th inst., attended with vomiting and purging, &c. I saw her at five same afternoon, and had no difficulty in identifying in her the same looks and symptoms which were so peculiar and striking in Prince, only, if possible, in a more aggravated form. She was treated in a similar manner, and with the same doses of medicine, except that in addition she was given brandy and other spirituous liquors in tolerably large quantities; all, however, proved of little or no effect, and this poor woman fell a victim to the disease at four o'clock next morning, having been ill just thirteen hours. Her pulse was imperceptible from the first, and she died without any signs of reaction.

Case 3.—*George Prince*, a fine straight athletic youth of nineteen, son of Samuel Prince, also an iron-founder, and living with his father, was attacked with all the common symptoms of cholera at four o'clock a.m. on the 17th inst., and died at one o'clock next morning, 21 hours from the attack. Much difficulty was experienced in giving this patient his medicine, and, as a necessary consequence, therefore, it was administered at irregular and too long intervals.

Case 4.—*Thomas Prince*, a strong well-made young man, 21 years old, brother of George Prince, worked at the same foundery, and lived also with his father Samuel Prince, was attacked with the cholera at 11 o'clock a. m. on the same day, and only ten hours from the time his brother was taken. The same kind of treatment was adopted in him as in the other cases, and in 28 hours the nature of his complaint had entirely changed. He has quite recovered. This patient took 100 grains of calomel and 10 grains of opium in about 20 hours. His mouth is not the least affected with the mercury; nor was the in any of the other cases.

Case 5.—*Mary Moore*, aged 60, thin, and of emaciated appearance, a charwoman, was hired to clean the house of Rennard, and came from a distance for that purpose on the morning of the 18th, but at 12 o'clock, noon of next day, was attacked with the cholera, and was removed to her own house soon after. The treatment of this case, at my request, was intrusted to other hands. The woman died, however, at four next morning, 16 hours from the attack.

It may be as well to state, that the iron-foundry at which the Princes worked, adjoins the Prince's Dock, and about 150 yards from the river Mersey. The house in which they live is in a dirty low neighbourhood, close to the Liverpool and Leeds canal.

I was much surprised to learn that the two young Princes *only* out of the first four of the above-mentioned cases, were reported as instances of cholera to the Metropolitan Board of Health, and yet it is quite evident that the disease of which they died, was communicated to them from the father. I had this information from our worthy mayor, who is chairman of the Liverpool Medical Board.

I am, Sir, yours,

Thomas Weatherill, M.D.

Liverpool, May 20th, 1832.

P.S. I have just come from seeing another case of cholera. It has occurred in a house adjoining that in which the aforementioned Mary Rennard died of this complaint on the 17th instant.

EFFICIENCY OF CALOMEL

IN THE TREATMENT OF

MALIGNANT CHOLERA.

By Joseph Ayre, *M.D., Hull.*

At the close of my last letter, published in The Lancet of the 28th ult., I declared my belief that the method of treating cholera by small and frequently-renewed doses of calomel, which I recommended, required no auxiliary means to render it efficient; but that, on the contrary, I had reason to fear that the use of them had frequently compromised its success. This view of the subject was only consonant with that which I had taken of the pathology of cholera, and which I was willing to have considered as the test of its correctness. For if the use

of emetics, or bleeding, or stimulants, and opiates in large doses, be needed as auxiliaries to the calomel in restoring the secretion of the liver, then my notion of its nature must be unfounded, and especially in respect to the relation which I have assumed it to hold to the cholera of this country, and in which, I well know, no such aids are needed.

The inordinate use of these means in the early cases of the disease, and the seeming success in some of the milder instances of it, led many, no doubt, to believe, that being, as they supposed, beneficial in some cases as the remedy in chief, they must be useful, if not necessary, as auxiliaries in all, from which would result an admixture of other active means with the treatment by small doses of calomel, and a consequent disappointment in the result of it in many cases, and a distrusting of the evidence in others, of the pre-eminent value of that remedy. The mustard, or other active emetic, indeed, if given early, and when the congestion is incipient, may produce, as the spontaneous vomiting generally does in the English disease, a sudden reaction in the secretory system of the liver, and a speedy termination of the complaint. But if this emetic be given, as I saw it in the north and elsewhere, in the stage of extreme collapse, and when no such reaction could be looked for, it can serve but to wring from the exhausted patient whatever of strength he has left him. In the same way bleeding may be employed at the commencement of the disease with an occasional chance of its relieving the congestion, and of thereby becoming beneficial; but when the congestion is fully established with its attendant collapse, the practice is full of danger; for however it may for the moment relieve the overcharged heart, by removing a part of the load which oppresses it, it can in no-wise contribute to renew the secretion of the liver which is required, (and which can alone remove the congestion,) whilst it reduces, still further, that vital energy by which the patient is to be supported through the struggle.

That bleeding in the collapse stage is inadmissible, is more than implied by the practice of many who, under precisely the same circumstances, resort to the use of stimulants. And of these it may be observed, that, like emetics in the incipient stage of a mild case of the disease, they may prove occasionally useful, by the stimulus they give to the arterial circle of vessels involved in the congestion, and thus force forward the circulation.

But the power which such forced circulation has to restore the secretion of the liver, is unappreciably slight. When given at the period when the collapsed stage is formed, and the pulse has become extinguished, they will, if freely used, rouse the heart to a more forcible action, and render the pulse perceptible; but, like the other means, they do not thereby remove the proximate cause, and the pulse almost instantly becomes extinguished again. If given in the slighter cases of the complaint, and the patient survives the collapse, and the secretion of the bile is at the same time unrenewed, the consecutive fever will ensue, with its concomitant inflammation in the mucous tissues of the stomach, and they will be then found, by their previous use, to aggravate these states, and materially to increase the danger. In that premonitory stage of the complaint, when the diarrhœa is the prominent affection, the use of opium in small doses is not only admissible, but highly beneficial, by weakening the energies of those morbid sympathies which have their seat and origin in the stomach and intestinal canal, and which appear to lead, as their ultimate results, to that obstruction in the secretion of the liver, and its consequent congestion, which form the essence of the complaint. If given, however, in large doses, whether before or after the congestion is fully formed, they will perhaps be found to do harm by temporarily extinguishing that excitability of the nervous system upon which every remedy is to act, and by which alone indeed the functions of life are carried on.

Such then being the views which I have taken of the principles upon which the foregoing agents act upon cholera, and of the pre-eminent importance of calomel given in small and frequently-renewed doses, as the great instrument for its cure, I decided in the cases which I should have to treat, to limit myself exclusively to this medicine, and to such minute doses of opium united with it as might be necessary to delay its passage through the stomach, and support the energies of the system.

In my last letter I reported two cases of successful treatment in which this plan was strictly adhered to, and one* also in which

* In your Journal of last week, a correspondent of the name of Clay has denied the correctness of the account given by me of this case in my last letter, and disclaims my right to quote it. To the first charge, I may reply, that I received the particulars from Dr. Alderson himself, and this, with the small—the *insignificant* difference between my account and his corrected one, is my answer in full. To the second charge, which he grounds upon the assumption that it was a private case, I reply that it was *not a private, but a public one.* Your correspondent is the hired and paid servant of the Board of Health, of which I am a member, and he is under a positive engagement whilst he is so, not to engage in any *private* practice. By his own admission he visited this patient alone, and bled him on his own responsibility, and without consulting any one. I regarded him therefore as the attendant, and his

recovery took place under the use of calomel, but given at wider intervals, and not unmixed with other means. These were the only cases that had been treated by small doses of calomel, by myself or others here, up to the period when I wrote, and since that time only two other cases, as far as I can learn, have been treated by the calomel given at the short intervals employed by me, or unmixed with other means. These two cases were both of the severest kind, but being treated according to the mode already adverted to, were cured with a facility which greatly surprised the gentleman who saw the cases with me, and who indeed, and more especially in the second one, had a leading share in the treatment. The following are the two cases as drawn up by Mr. Sharpe:

CASE 1.

At half past nine o'clock p.m. on Thursday the 10th of May, I was called to visit Mary Lotherington, a married woman, aged 29, of intemperate habits, residing in Trundle Street. Her former residence was in Green Lane, Sculcoate, in which house three cases of cholera had occurred. She left there on the 7th of May. I found her labouring under the following symptoms: — Pulse imperceptible; extremities cold, and of a livid hue; skin dry; eye sunk; countenance contracted; tongue moist, but colder than natural; thirst excessive; vomiting and purging of a fluid which had the appearance of rice-water; severe pain in the epigastrium; cramps in the upper and lower extremities; urine suppressed. I ascertained that she had been slightly affected with diarrhœa from two a.m., and at eleven a.m. was attacked with severe vomiting, purging, and cramps of the extremities, which continued until I saw her. I immediately gave her two grains of calomel with four drops of the tinct. of opium, to be taken every ten minutes; heated bricks were applied to the feet and sides of the chest.

Half past eleven p.m. I saw her again in conjunction with Dr. Ayre: there was not any alteration of the symptoms. The pills were now given every five minutes during an hour, and afterwards every ten minutes, and a mustard cataplasm was applied to the epigastrium. We remained with her near two hours, during which time the pulse became slightly perceptible, beating 120 in a minute; the cramps less severe; vomiting and purging rather abated My assistant remained with her during the whole night, and administered the mixture. On leaving her, the pills were ordered to be continued every ten m nutes.

Friday, eight a.m. Thirty doses of the calomel and opium had been taken; the surface is warmer; the eye more prominent; countenance more animated; purging and sickness nearly abated, but the evacuations are of the same appearance; has not yet passed any urine; the calomel and opium to be continued every fifteen minutes.

Half past twelve p.m. The symptoms somewhat relieved, excepting the sickness, which has rather increased; has not yet passed any urine. The calomel to be continued without the opium every half hour, with an effervescing draught, and a teaspoonful of brandy with each dose.

Two p.m. Sickness rather abated, but the cramps are more severe; urine still suppressed; pulse 100, and of greater strength. The calomel and opium pills to be taken again every half hour with the effervescing draught.

Five p.m. Cramps abated; sickness not so severe; has not yet passed any urine; pulse 95, and stronger. Calomel pills to be given every half hour without the opium.

Nine p.m. Continues improving, but has not yet passed any urine; has passed some stools slightly tinged with bile. Continue the calomel pills every half hour during the night.

Saturday, seven a.m. The symptoms are much relieved; has passed a little urine for the first time during the last 44 hours. Dr. Ayre had seen her previous to me, and ordered a powder of rhubarb and magnesia, and an effervescing draught to be given occasionally, and the calomel pills to be given every two hours. From this time the patient continued to improve rapidly; the secretions became natural, and yesterday and to-day she has had several dark bilious motions; the pulse is only 76; the tongue is clean and moist; there is no soreness of the mouth, and, excepting for some nausea which still continues, she may be pronounced as convalescent.

R. SHARPE.

Hull, 14th May, 14, Castle Street.

CASE 2.

Jane Hodgson, aged 50, a married woman of temperate habits, residing in Caroline Street, Spencer Street, was first seen by me at half past two p.m. on Friday, May 13. The husband informed me that she had been labouring under diarrhœa since Monday, but that at five a.m., May 13, she was attacked with severe vomiting, purging, and cramps. I found her affected with the

friend as the superintendent of the case, and as the servant of the Board of Health, and acting for it, I referred to the case, being myself a member of that Board. It was not for me to know, nor did it concern me to inquire, whether he or his friend had the larger share in the honour of the case, or which was to the other, being both young men, the premier in the management of it.—J. A.

following symptoms: pulse 125, almost imperceptible; surface dry and cold; hands shrivelled; the lips, chin, hands, and feet, blue; eyes sunk and surrounded with a dark areola; countenance expressive of great anxiety; cramps of the lower extremities; voice feeble; thirst excessive; tongue slightly furred and warm; sickness and purging of a fluid resembling rice-water; urine suppressed. Two grains of calomel, with three drops of tincture of opium, to be taken every five minutes for one hour, and then every ten minutes; hot bricks to be applied to the feet.

Five p.m. The symptoms still continue, but are less severe. One drop and a half of the tincture of opium with the calomel, to be taken every ten minutes for one hour; and afterwards every fifteen minutes.

Eight p.m. Was joined by Dr. Ayre; pulse 100, and stronger; surface warm; blueness disappeared; countenance regained its natural appearance; cramps less severe; purging entirely abated; sickness continues; has not yet passed any urine. Repeat the calomel, with one drop of the tincture every half hour.

Saturday, half past twelve a.m. Sickness nearly abated; thirst not so troublesome; has passed no urine. The pills to be taken every hour.

Seven a. m. Pulse 90 and strong; sickness entirely ceased; no urine yet; has had some sleep during the night. The pills to be continued and taken every two hours.

Two p.m. Has had two liquid stools void of bile; urine still suppressed. Continue the pills as before.

Half past nine p.m. Improved in all her symptoms. Has passed a little urine, after 36 hours suppression. A powder of jalap and rhubarb to be taken immediately, and repeated in three hours.

Sunday, ten a.m. Appears much improved; has just passed another stool, but not altered in appearance. Urine passes freely. The powders of rhubarb and jalap to be repeated.

Nine p.m. Has been rather affected with sickness; in other respects much better; has passed some bilious stools; the mouth slightly affected. An effervescing draught to be taken occasionally. She may be considered as quite convalescent.

R. Sharpe.
Monday, May 21st.

In the cases above given, and in those to which I have referred, as at once illustrating my views of the nature of the disease, and of the treatment demanded for it, I desire not to push my conclusions beyond what the facts will legitimately warrant. The four cases are the only ones in which I knew the practice has been pursued in strict accordance with my views, and without any admixture of other means. They were all severe cases, and they all recovered, and without being followed by any consecutive fever, which happens in so many cases of recovery, but which did not happen here, and could not happen if my views be correct concerning the mode by which the calomel acts upon the disease. The treatment and results of every case I may hereafter have shall be reported, and I hope, in the mean while, that others may be induced to make the same trials, and duly report the issue of them.

Joseph Ayre.
Hull, May 23d, 1832.

MALIGNANT CHOLERA.

DOCUMENTS

COMMUNICATED BY THE

CENTRAL BOARD OF HEALTH, LONDON,

RELATIVE TO THE TREATMENT OF CHOLERA BY THE COPIOUS INJECTION OF AQUEOUS AND SALINE FLUIDS INTO THE VEINS.

No. 1.

Letter from Dr. Latta* *to the Secretary of the Central Board of Health, London, affording a View of the Rationale and Results of his Practice in the Treatment of Cholera by Aqueous and Saline Injections.*

Leith, May 23, 1832.

Sir,—My friend Dr. Lewins has communicated to me your wish for a detailed account of my method of treating cholera by saline injection into the veins, with which I now most willingly comply. My scope for observation, since I commenced this treatment, has been too limited to allow me to be very copious on the subject, but I think I can adduce sufficient proof to the unprejudiced, not only of its safety, but of its unquestionable utility. I have never yet seen one bad symptom attributable to it, and I have no doubt that it will be found, when judiciously applied, to be one of the most powerful, and one of the safest remedies yet used in the second stage of cholera, or that hopeless state of collapse to which the system is reduced.

* Dr. Latta having signified his wish that this communication should be published in The Lancet, the Central Board of Health have accordingly forwarded it to this Journal.—Ed. L.

Before entering into particulars, I beg leave to premise that the plan which I have put in practice was suggested to me on reading in THE LANCET, the review of Dr. O'Shaughnessy's report on the chemical pathology of malignant cholera, by which it appears that in that disease there is a very great deficiency both of the water and saline matter of the blood. On which deficiency, the thick, black, cold state of the vital fluid depends, which evidently produces most of the distressing symptoms of that very fearful complaint, and is, doubtless, often the cause of death. In this opinion I am abundantly borne out by the phenomena produced on repletion by venous injection.

So soon as I learnt the result of Dr. O'Shaughnessy's analysis, I attempted to restore the blood to its natural state, by injecting copiously into the larger intestines warm water, holding in solution the requisite salts, and also administered quantities from time to time by the mouth, trusting that the power of absorption might not be altogether lost, but by these means I produced, in no case, any permanent benefit, but, on the contrary, I thought the tormina, vomiting, and purging, were much aggravated thereby, to the further reduction of the little remaining strength of the patient; finding thus, that such, in common with all the ordinary means in use, was either useless or hurtful, I at length resolved to throw the fluid immediately into the circulation. In this, having no precedent to direct me, I proceeded with much caution. The first subject of experiment was an aged female, on whom all the usual remedies had been fully tried, without producing one good symptom; the disease, uninterrupted, holding steadily on its course. She had apparently reached the last moments of her earthly existence, and now nothing could injure her—indeed, so entirely was she reduced, that I feared I should be unable to get my apparatus ready ere she expired. Having inserted a tube into the basilic vein, cautiously — anxiously, I watched the effects; ounce after ounce was injected, but no visible change was produced. Still persevering, I thought she began to breathe less laboriously, soon the sharpened features, and sunken eye, and fallen jaw, pale and cold, bearing the manifest impress of death's signet, began to glow with returning animation; the pulse, which had long ceased, returned to the wrist; at first small and quick, by degrees it became more and more distinct, fuller, slower, and firmer, and in the short space of half an hour, when six pints had been injected, she expressed in a firm voice that she was free from all uneasiness, actually became jocular, and fancied all she needed was a little sleep; her extremities were warm, and every feature bore the aspect of comfort and health. This being my first case, I fancied my patient secure, and from my great need of a little repose, left her in charge of the hospital surgeon; but I had not been long gone, ere the vomiting and purging recurring, soon reduced her to her former state of debility. I was not apprised of the event, and she sunk in five and a half hours after I left her. As she had previously been of a sound constitution, I have no doubt the case would have issued in complete reaction, had the remedy, which already had produced such effect, been repeated.

Not having by me the Number of THE LANCET containing Dr. O'Shaughnessy's analyses, I adopted that of Dr. Marcet, only allowing a smaller proportion of saline ingredients. This I now find to be considerably less than natural, according to the more recent analyses. I dissolved from two to three drachms of muriate of soda and two scruples of the subcarbonate of soda in six pints of water, and injected it at temperature 112° Fah. If the temperature is so low as a hundred, it produces an extreme sense of cold, with rigors; and if it reaches 115°, it suddenly excites the heart, the countenance becomes flushed, and the patient complains of great weakness. At first there is but little felt by the patient, and symptoms continue unaltered, until the blood, mingled with the injected liquid, becomes warm and fluid; the improvement in the pulse and countenance is almost simultaneous, the cadaverous expression gradually gives place to appearances of returning animation, the horrid oppression at the præcordia goes off, the sunken turned-up eye, half covered by the palpebræ, becomes gradually fuller, till it sparkles with the brilliancy of health, the livid hue disappears, the warmth of the body returns, and it regains its natural colour,—words are no more uttered in whispers, the voice first acquires its true cholera tone, and ultimately its wonted energy, and the poor patient, who but a few minutes before was oppressed with sickness, vomiting, and burning thirst, is suddenly relieved from every distressing symptom; blood now drawn exhibits on exposure to air its natural florid hue.

Such symptoms, so gratifying both to the sick and the physician, must never allow the latter to relax in his care—the utmost vigilance is still necessary. At first the change is so great that he may fancy all is accomplished, and leave his post for a while. The diarrhœa recurring, he may find his patient, after the lapse of two or three hours, as low as ever. As soon as reaction by the first injection is produced, mild

warm stimulants, such as weak gin-toddy, mixed with some astringent, should be freely and assiduously administered. An attempt should be made to fill the colon with some astringent fluid. That such is requisite, is evident from the watery diarrhœa returning with violence, and if not restrained, death will ultimately make sure of his victim, therefore so soon as the pulse fails, and the features again shrink, the venous injection must be repeated, taking care that the fluid in use retains its proper temperature. The injection should be carried on very slowly, unless the patient is much exhausted, when it may be used more rapidly at first, until a little excitement is produced, after which it should not exceed two or three ounces per minute, and now is the time for the exhibition of astringents by the mouth, which will be retained, for in general the sickness entirely leaves during the operation.

Such remedies must be persisted in, and repeated as symptoms demand, or until reaction is permanently established. I have witnessed no violent symptoms accompanying the rapid injection of the fluid, but I have thought that the hasty repletion of the system was followed by great increase of the evacuations, and consequently a more sudden depression of the powers of life. The quantity to be injected depends on the effect produced, and the repetition on the demands of the system, which generally vary according to the violence of the diarrhœa; the greater the degree of collapse, the greater will be the quantity needed, though not uniformly, for a very slight loss produces much depression in some systems; hence there is often great collapse, without much vomiting, purging, or cutaneous discharge.

Although in every case, even the most desperate, the cholera symptoms were removed, some of my cases failed, which I attributed to one or other of the following causes; either the quantity injected was too small, or its effects were rendered abortive by extensive organic disease, or its application was too late.

I have already given an instance where deficiency in quantity was the cause of failure, which I will now contrast with one in which it was used freely. A female, aged 50, very destitute, but previously in good health, was on the 13th instant, at four a. m., seized with cholera in its most violent form, and by half-past nine was reduced to a most hopeless state. The pulse was quite gone, even in the axilla, and strength so much exhausted, that I had resolved not to try the effects of the injection, conceiving the poor woman's case to be hopeless, and that the failure of the experiment might afford the prejudiced and the illiberal an opportunity to stigmatise the practice; however, I at length thought I would give her a chance, and in the presence of Drs. Lewins and Craigie, and Messrs. Sibson and Paterson, I injected one hundred and twenty ounces, when like the effects of magic, instead of the pallid aspect of one whom death had sealed as his own, the vital tide was restored, and life and vivacity returned; but diarrhœa recurred, and in three hours she again sunk. One hundred and twenty ounces more were injected with the same good effect. In this case 330 ounces were so used in twelve hours, when reaction was completely re-established; and in forty-eight hours she smoked her pipe free from distemper. She was then, for better accommodation, carried to the hospital, where probably, from contagion, slight typhoid symptoms were produced. She is now, however, convalescent.

The second cause of want of success is the presence of organic disease; this, probably, renders the possessor very liable to attacks of cholera; and the latent evil, which previously gave but little uneasiness, suffers aggravation in all its symptoms, more especially after reaction has been produced, and has evidently, in many cases, been the cause of death. A delicate young female, of strumous habit, who had been for some years subject to pectoral complaints, was rescued from a state of collapse by the injection of sixty ounces of the saline fluid, administered in separate portions, within the space of twelve hours. After lingering for ten days she died; the heart was found in a state of atrophy, covered with strong evidence of the existence of ancient disease, and floating in eight ounces of pus. In another case every internal organ was diseased; some of them so much so, that it was astonishing the individual lived so long.

The third cause of the occasional want of success, is the late application of the remedy. Hitherto I have had opportunity of injecting only in extreme cases, after every other means had entirely failed, cases which apparently would have soon proved fatal. Here the obstacles to be overcome have been of no ordinary kind, notwithstanding the result of the practice is of the most encouraging nature, and the number of cases now convalescent or doing well highly gratifying. In every fatal case we have had an opportunity of examining, independent of organic disease, I have found a large quantity of fibrin in the cavities of the heart, especially on the right side, where it had extended from the auricle through the ventricle into the pulmonary artery. Such deposition must have formed a certain obstacle to recovery, and is, no doubt, from the interruption it gives to the

pulmonary circulation, the cause of the heavings of the chest, and the inordinate action perceptible in the centre of circulation many hours before death. Now surely it is reasonable to suppose, that if this, the most simple of all remedies, were applied early, before the blood drained of its water has collected in the larger vessels, in fact before such fibrinous depositions have taken place in the cavities of the heart, is it not reasonable to suppose that such would be entirely prevented?

But not only is early injection advisable on this account, not only is stagnation of the blood prevented by it, and the laborious breathing, and the præcordial oppression, the intense sickness, the burning thirst, the extreme depression of the vital powers, and the chances of aggravating chronic disease, or of producing new organic lesion, in a great measure avoided; but it is rational to suppose that the consecutive fever will be rendered much milder, and that this is the case, is supported by my own experience, even though the remedy has not been applied earlier, indeed the fact is very evident. In an ordinary attack of cholera, much fluid is lost; and if the individual is so fortunate as to get out of the stage of collapse, if consecutive fever of typhoid type comes on, the system, left to its own resources to replace the lost serum, must be but ill fitted for the task, for the debility is extreme, absorption goes on slowly, the fever will be much aggravated by the irritation of internal congestion; local inflammation will thereby be produced, and the chance of recovery will be but small. Much of this evil is to be mitigated or entirely avoided by injection into the veins, of which circumstance I can adduce living instances; and where the patient, who had been injected, has sunk under organic disease, the usual marks of congestion are not perceptible.

The apparatus I have used, is Read's patent syringe, having a small silver tube attached to the extremity of the flexible injecting tube. The syringe must be quite perfect, so as to avoid the risk of injecting air; the saline fluid should never be injected oftener than *once* into the same orifice, and the vein should be treated with much delicacy to avoid phlebitis. The wound should be poulticed and carefully watched, if it does not heal by the first intention.

I am, Sir,
Your most obedient servant,
THOMAS LATTA, M.D.

No. 2.

Letter from DR. LEWINS *to the Secretary of the Central Board of Health.*

Results of the Injection Practice in the Drummond-street Cholera Hospital, Edinburgh.

SIR,—You will receive from Dr. Latta the details of two or three cases treated by saline injections. We have both been so much occupied to-day, that we have not had leisure to get our communications ready to be sent in the same envelope. We steal an hour from the time usually allotted for rest to write to you. In case Dr. Latta should omit to mention the circumstance, I beg to mention that his patient, Cousins, the woman who was injected to the amount of 376 ounces, and who promised to do well, for a considerable time, was a person of very dissipated habits.

In the Drummond-street Hospital six patients have been injected, and three recovered, or are recovering. In the three that died, extensive organic disease was found on dissection; disease that had existed previously to the attack of cholera.

I send herewith the report of two cases, treated by Dr. Craigie of this place, which, at my request, he furnished me to-day for the perusal of the Board.

I intended to have sent an account of an interesting fatal case, the only one in which the venous injection may be said to have fairly failed where it was fairly used; that I shall do to-morrow. I have the honour to be, Sir, your most obedient servant,

ROBERT LEWINS, M.D.

Leith, May 27th.

No. 3.

Details of Two Cases of Malignant Cholera treated by Venous injection, by DR. CRAIGIE, *of Leith.*

No. 1. Case successful. 15 lbs. injected at intervals in nine hours.—Martha Smith, aged 38, a noted drunkard, thin and debilitated, in sixth month of pregnancy, admitted into the hospital at 8 p.m., May 16th, 1832.

It appears she had had vomiting and purging since Sunday morning, 12th inst. Cramps came on about four hours ago in both legs; great evacuations both upwards and downwards like dirty water. The countenance is now collapsed; eyes sunk; tongue cold; pulse imperceptible at wrists; very small in brachial artery; 124.

℞ *Muriat. sodæ* ʒiij;
Carbon. sodæ ʒi;
Aq. calid. ℔vj. *solve. Ft. Enema statim injiciend.*

Sinapisms to spine and epigastrium; let her be placed on heated tin mattress.

Nine a.m. Has a good deal of vomiting; is getting warmer; pulse now perceptible in right wrist; tongue warmer; she allows the enema to come away without giving notice to nurse. Saline enema as above, with the addition of white of eggs, to be repeated every half hour.

Ten. Vomiting and purging of watery fluid, with slimy matter in it.

Half-past ten. Cramps have returned severe in left leg; pulse again imperceptible; urgent thirst and constant vomiting. *Rep. enema et pulveres effervescentes.*

Half-past eleven. Breathing becoming much affected; extreme restlessness; cramps severe in legs, and every symptom of sinking. Let the following saline solution be injected into one of the veins of the arm.

℞ *Muriat. sodæ* ʒi;
Carbon. sodæ gr. x;
Aq. calid. ℔ij, *solve temp.* 105° *Fahr.*

Noon. When about ℔i had been thrown in, the pulse was perceived to flutter at the wrist, and gradually strengthened as the injection was proceeded with. By the time ℔iiiss had been injected, the countenance, which was before quite death-like, now beamed with the appearance of health, and she began to converse freely. Pulse 96, moderate. To have ʒi gin in warm water with sugar.

Half-past one. The gin was immediately rejected. Pulse has again gradually become imperceptible, and respiration quick and laborious.

Two. Let the venous injection be repeated to ℔vij.

The effect of the injection, as formerly, was very striking. To see an individual who seemed *in articulo mortis* brought back, as it were, in so short a space of time to an apparently tolerable state of health could not but astonish the beholder. Before the injection was finished the pulse had returned to a healthy fulness and firmness. Expresses herself much relieved; no purging, but vomits much serous matter.

℞ *Muriat. sodæ* ʒij;
Carbon. sodæ ʒi;
Alcohol. dilut. ʒi;
Aq. calid. ℔iij. *M. ft. enema statim injiciend.*

Four. Enema retained about an hour and a half; surface of body now comfortably warm; she has not passed more fluid by stool than was thrown into the rectum.

Six. Has slept softly for an hour; the first sleep she has had for many days.

℞ *Subm. hydrarg.* gr. v;
Pulv. opii gr. ss. *M. sumat stat. et rep. 3tia quaque hora.*

Nine. Complains much of vomiting and sense of weakness; countenance rather collapsed; breathing difficult.

Let ʒlxxx *be injected into the veins again gradually.*

After the first few ounces were thrown in she complained of an acute pain at the epigastrium, and faintness, probably arising from the fluid being thrown in too fast upon the heart, or from the passing of a bubble or two of air, which may have got in from the inaccuracy of the injecting apparatus used. Be that as it may, the circulating system was so much affected, that the pulse, from being distinct though feeble, became quite imperceptible, but on stopping the injection for a few minutes the pulse gradually returned, and the pain abated. She expressed herself as always getting relief from the operation.

Eleven. Vomiting continues urgent.

App. emp. cantharid. epigast.
Effervescing draughts occasionally.

May 17th. Has passed about ℔j of urine, of natural appearance; this is the first she has made since she was brought in.

From this time she went on gradually to improve, but stomach continued very irritable, and the matter vomited was bilious.

21st. Labour pains came on, and she was delivered of a still-born female child.

22d. Symptoms of phlebitis in right arm came on, proceeding from the wound upwards, but this yielded to the ordinary treatment, and she may now be considered out of all danger, though she is not yet reported cured.

THOMAS CRAIGIE, M.D.

Leith, May 26th, 1832.

No. 2. *Case fatal—appearances on dissection.* — George Cousins, aged 10, was brought into quarantine at nine a.m., 13th May, on account of his mother being ill of cholera. About an hour after admission began to vomit and purge, and it appears he has had diarrhœa severely all the morning. Pulse 102, extremely weak; complains much of sickness; countenance collapsed; areolæ rather dark under the eyes; voice very weak.

He had hot air-bath immediately, and got the following dose:—

℞ *Ol. ricini* ʒss;
Tinct. opii gtt. xv;
Aq. menth. pip. ʒiss *M. ft. haust.*

Half-past Eleven a.m. Draught retained; sickness has gone off; complains of heat of bath; let it be removed.

Noon. Has vomited some watery matter, with undigested potatoes in it, and again a rice-watery fluid with flocculi. He has now

a considerable degree of jactitation; countenance more sunk, and great desire for cold water. These symptoms went on increasing in severity in spite of sinapisms to spine, effervescing draughts, calomel, and Dover's powder, warm water, enemata, &c., and head symptoms were now making their appearance.

Half-past Two p. m. Pulse quite imperceptible, and has been so for an hour and a half; he lies quiet and drowsy, with eyes turned upwards; face bedewed with cold perspiration; hands and feet cold and very blue.

My colleagues, Drs. Combe and Lewins, saw him with me at this time, and concurred with me in thinking him not only beyond all hope of recovery, but likely to die *within an hour or two*.

From what I had seen of the resuscitating powers of Dr. Latta's treatment on the boy's mother this morning, by venous injection, I determined on giving it a trial, though this was a case rather likely to bring discredit on the remedy than otherwise. The following solution at temperature 102° F. was slowly injected into the median basilic by means of a common silver blowpipe attached to Read's enema syringe.

℞ *Muriat. sodæ* ʒi;
Carbon. sodæ gr. x;
Aq. calid. lbvj, *solve*. T. 102.

Three p. m. A few minutes after the injecting was commenced the pulse returned to the wrists, the blueness and coldness of the extremities gradually wore off; the countenance was much improved; and the whole fluid was injected within twenty minutes.

Half-past Three p. m. He has now a healthy blooming appearance; is sitting up in bed, and looking about him as if awoke out of a dream. Pulse 110, natural; extremities of good colour and warm; voice much stronger.

Half-past Four p. m. Pulse has been gradually falling off since last report; is getting listless, and dislikes to be troubled with questions; breathing becoming laborious, and head symptoms more marked, with squinting to a slight degree superadded.

Seven p. m. Pulse again imperceptible; respiration quick and laboured; countenance collapsed; tongue and breath cold; says he is dying.

Let the venous injection be repeated to lbiij.

Half-past Seven p. m. Pulse immediately returned, of natural strength and fulness, and continues so.

Nine p. m. Lies very quiet; pulse good; breathing more natural; surface of body covered with warm perspiration.

Ten p. m. Large watery evacuations from the bowels came on soon after last injection; the quantity cannot easily be guessed, but must have been considerable, as it is running through the mattress on the floor. Pulse scarcely perceptible; screams loudly like a child in hydrocephalus.

Eleven p. m. Pulse quite imperceptible; is sinking fast; venous injection attempted a third time, but desisted from as it was not productive of the first good effects. Both pupils much dilated. Died at two a. m. 14th.

Dissection fifteen hours after Death.—On exposing the brain and spinal marrow, but before opening their investing membranes, the least pressure with the fingers on the middle of the hemispheres of the brain caused a remarkable undulating down to the middle of the back, showing the existence of a fluid beneath the membranes, and on opening them, about two drachms of pure serum flowed out.

The surface of the brain was rather vascular, and the blood in the most minute vessels particularly bright. A few ecchymosed spots on its surface. All the other viscera were found healthy. The urinary bladder contained about half an ounce of urine.

Leith, 26th May, 1832.

THOS. CRAIGIE, M.D.

No. 4.

Note from Dr. MACINTOSH *to* Dr. LATTA.

My dear Sir,—You will be delighted to see the enclosed. Our old patient up to this hour is doing well. Send this to Dr. Lewins.

Yours, &c.
J. MACINTOSH.

Dr. Latta.

Note from Mr. RACY *to* Dr. MACINTOSH.

Drummond-street, 11 o'clock.

Dear Sir,—Another case has just come in, and we have transfused 6lbs of saline mixture in the presence of Dr. Alison at the patient's house with better success than in any of our other cases. The doctor is quite delighted. Yours, &c.

JOHN RACY.

No. 5.

List of Queries addressed to Drs. LEWINS *and* LATTA, *by the Central Board of Health, London, relative to the preceding cases, &c.*

Queries by the Central Board.

1. Were any of your patients bled previously to, or after, the saline injections into their veins?

2. Were the evacuations by purging, vomiting, or perspiration, increased by the injections?

3. Did any of the patients submitted to the saline injection plan die; and if examined after death, what were the appearances?

4. Had the pulse at the wrist absolutely ceased, and for how long, or had blueness of the surface taken place, and to what extent, in any of your patients before the injection of the saline fluids; and how many of such patients recovered under that treatment?

5. Had suppression of urine been *perfectly* established, and for how long, in any of your cases previously to the saline injection, and what effect did that practice appear to produce on the urinary secretion?

6. What effect did the injections appear to have on the temperature of the patient?

7. Were the blood and evacuations analysed before and after the injections?

8. Did consecutive fever occur in any, and if so in how many of your cases, whether successful or otherwise?

9. Was the quantity of the evacuations noted before and after the injections in any of your cases?

10. Please to give the details of two or three cases treated by saline injections with age, condition of life, temperament, habits, &c., and particulars of such other treatment as may have been adopted in addition to the saline injections.

Answers by Dr. Lewins.

1. None before. One to the amount of twelve ounces immediately after the first injection.

2. The evacuations by purging and vomiting, in most of the cases continued. In some of them the purging, the discharge from the bowels at least, was increased. Perspiration was increased in all.

3. Yes; no less than ten of the fifteen that have been injected up to the present day; but under such circumstances as do not detract from the general merits of the practice: this will be made evident by the history of the cases that will be sent by to-morrow's post.

4. Yes; even at the axilla in some of the cases, blueness of the surface had taken place to a considerable extent. Five of these patients recovered.

5. Complete suppression, I think, in all except two, and for hours. In all the successful, and in some of the unsuccessful cases, the effects of the injection in restoring the secretion of urine were most evident.

6. The injections raised the temperature of the body; but in all the successful cases where the veins were injected the patients complained of cold soon after the injection.

7. Neither the blood nor the evacuations were analysed, but I sent some of the blood of a patient that had been injected by the veins to Dr. Reed for analysis to-day.

8. The consecutive fever in all the patients who were injected has been slight.

9. No; but they were excessive in most of the cases.

10. Question ten shall be fully answered by to-morrow's post.

ROBERT LEWINS, M.D.

6, Quality-street, May 26, 2 o'clock a.m.

No. 6.

Latest Communication from Dr. LEWINS *to the Secretary of the Central Board of Health.*

Sir,—The urgency of my present private and public duties prevents me from communicating more to you to-night than the following brief particulars of a case that occurred at the Leith Cholera Hospital yesterday:—

A woman of about forty years of age was admitted on Sunday evening at seven o'clock. She was *pulseless* even at the axilla, *sightless*, *cold* and *blue* over almost the whole body. *Respiration* very slow and irregular—in a word, she was all but lifeless. It was feared she would be dead before the operation of injecting could be commenced. Between seven at night and two o'clock next morning, there were thrown in 284 ounces, upwards of twenty-three pounds. The report of her situation at two o'clock on Monday morning, in the hospital book, is as follows:—"A change for the better that appears almost miraculous has taken place. The action of the heart is greatly improved; respiration not in the least laborious, but quicker than natural; pulse 120, small, but distinct. She can articulate distinctly; countenance natural; lips red; tongue moist and warm; she perspires freely; heat over the whole body natural."

A full report of this wonderful case shall be forwarded soon. I remain, Sir, &c.,

ROB. LEWINS.

P.S.—In one the pulse had ceased at the wrist eight hours before the injection. Dr. Alison had seen the patient eight hours before the operation, and the pulse was then imperceptible.

Quality Street, Leith, May 29, 1832,
1 o'clock a.m.

NOTE FROM DR. O'SHAUGHNESSY.

Proposal to combine Stimulants and Astringents with the Aqueous and Saline Injections.

To the Editor of THE LANCET.

SIR,—Having learned from the Central Board of Health the circumstances of Dr. Latta's peculiar practice, I may be perhaps excused for requesting the immediate insertion in your Journal of the following brief observations:—

Although I expected great benefit from the injection of water into the veins, and although I believed that the addition of small quantities of salts to that water would contribute powerfully to the restoration of the blood to its natural state, I beg to state that the results of the practice described by Drs. Latta and Lewins exceed my most sanguine anticipations. When we consider that no practitioner would dare to try so novel an experiment, except in cases beyond hope of relief by any ordinary mode of treatment, and consequently desperate to the last degree, even a solitary instance of recovery affords matter for congratulation.

I write now for the purpose of offering the following suggestions to the gentlemen engaged in these experiments.

Although by the injection of water and salts (in quantities varying according to the previous extent of the evacuations), we may restore the deficient fluids of the body, and bring back the blood to its normal state, thus possibly removing a powerful cause of death in this disease, we must still remember that the unknown *remote* cause, and other agents, may be and still are in operation, and require to be remedied before a perfect cure can be performed. The great debility, the natural effect of the evacuations, will probably require some stronger stimulant than the new and artificial blood will afford. Some means will also have to be taken to prevent the recurrence or continuance of those evacuations, an event of constant occurrence in Dr. Latta's cases.

I would therefore recommend, that in addition to the injection of water, either simultaneously or subsequently, as circumstances would suggest to the operator—*medicinal agents*—of the stimulant or *astringent* classes, for example, *should also be injected in minute doses.*

In selecting the agents employed, it is to be cautiously observed that they must not be chemically incompatible with the blood. They must not coagulate albumen, fibrin, or colouring matter, or darken the colour of the latter. As a general rule they should be soluble in water.

As *stimulants*, minute quantities of *carbonate of ammonia* dissolved in water might be used. Dupuy, of Alfort, has found that this salt may be injected with safety into the veins of horses. Small doses of the *sulphate of quinine* might also be thus administered. Even extremely dilute spirits might be employed.

Weak decoctions, or solutions of the vegetable *astringents*, might also, I conceive, be injected with great advantage. Gaspard's experiments fully warrant me in stating that these cannot induce any *bad* effect, and that they may therefore be tried with perfect safety.

I am, Sir, your obedient servant,
W. B. O'SHAUGHNESSY, M.D.
London, June 2, 1832.

ROYAL COLLEGE OF PHYSICIANS.

May 28th, 1832.

TREATMENT OF CHOLERA AT CONSTANTINOPLE.

SIR HENRY HALFORD, M.D., in the chair. This evening the assembly in the library was less numerous than usual, and with the exception of a few church dignitaries, there were none of the usual aristocrat visitants. The President announced the first paper to be a letter on the successful treatment of cholera, from Dr. Samuel M'Duffal, Physician to the Embassy at Constantinople, to Sir Robert Gordon, late ambassador at that court.

The writer considered the great indication in the treatment of this formidable disease was to restore the lost balance of the circulation; and this was to be done, in their way, by the exhibition of internal stimuli, by free venesection, and by the use of such external applications, as mustard cataplasms, hot-bricks, and various rubefacients. This mode of treatment he had found successful, in the great majority of instances. When a patient was brought to him with the hollow eye, cold surface, leaden hue, and feeble pulse, characteristic of this malady, he immediately administered brandy, in large quantities, qualified with opium. He then would bleed the patient to sixteen or twenty ounces. As the blood flowed, the surface grew gradually warm, the pulse rose, and the eye and countenance regained their tranquillity. The patient after this was put into a warm bed, and treated with rubefacients, and recovered in a few days. In the village of Terapia, in the vicinity of Constantinople, out of 204 patients attacked with cholera, and treated in this manner, 200 recovered; and the proportion in other places was nearly the same. A native merchant of great wealth,

affected with the incipient approaches of cholera, would not suffer his barber to bleed him, being buoyed up by the hope that the disease would not run its course. Dr. M'Duffal was sent for, and found him with leaden extremities, cold skin and breath, imperceptible pulse, and the peculiar facial expression of this epidemic. He was bled immediately to sixteen ounces, and the symptoms gradually subsided; stimulants internal as well as external were freely resorted to. About an hour after this a tendency to relapse was observed, when sixteen ounces more blood were abstracted, and the other treatment continued. He ultimately recovered.

An Armenian nun, who had long been subject to frequent attacks of gastro-enteritis, was attacked with cholera to a severe degree; stimulants were freely given, and copious venesection resorted to. The collapse was subdued, but it was followed by a sharp gastro-enteritic affection, which was overcome by leeches, mucilaginous potions, and enemata. Dr. M'Duffal opines, that there is no hope if more than four hours have elapsed before the administration of remedies; and he recommends that the public in general should be made acquainted with the importance of immediate measures being had recourse to. The writer used himself to counsel the people within his sphere of observation, to give freely to the affected person any spirits he might have in their dwelling; to place him in a warm situation, and immediately to send to a barber to bleed him. When these prompt measures were resorted to, the patient, on the arrival of the physician, was in a much more favourable condition for treatment; for the stage of collapse being by those means subdued, the stage of reaction alone remained to be grappled with. When marks of reaction were observed, it became expedient to intermit the stimulants, for in all cases a great tendency to inflammatory affections of the head, chest, and abdomen, existed during the stage of reaction. These affections were managed much in the same manner as in England, by leeches, antiphlogistics alteratives, such as calomel, opium, and others, and epispastics.

Dr. M'Duffal did not dwell much on the rise and causes of the disease; but he was of opinion, that mental depression was a great predisponent. The inhabitants of the Pera suffered most severely from this malady, which he ascribes to chagrin from loss of property, occasioned by the burning of that quarter of the city in the summer of 1831. The blood presented much the same character as it does in such cases in this country, being black and tenacious. The ejected fluids also presented the distinctive aqueous or serous character.

DR. HEBERDEN, THE ELDER, ON PERSPIRATION.

As soon as the foregoing paper was concluded by the Registrar, the President read a letter from Dr. Heberden, containing numerous apologetic expressions relative to an essay "On Perspiration," written about ninety years ago by the elder Heberden his father, and which he presented to the President to be read at the meeting. This document affords a curious commentary on the opinions then entertained on some pathological points. The author stated that the ancients took no note of any less degree of perspiration than sweat. Sanctorinus had the merit of first calling the attention of physicians to the insensible transpiration. He illustrated in his works the nature of this action, and founded some ingenious theories on the facts which he had ascertained, and, like all discoverers, he was so much absorbed by the importance of the subject, that he referred every disease to a derangement of this function. Dr. Heberden gives, in this essay, a tolerably good description of the structures contributing to the perspiratory action. He expressed an opinion that the perspiration was not entirely excrementitious, but possessed some analogy to the bile, saliva, and pancreatic juice. The glands and terminal vessels situate on the surfaces of serous sacs, when occasional pouring out of lubricating fluids takes place, and which fluids are again absorbed, were, he thought, very similar in function with the skin which is bedewed by the oleaginous exudation of the cutaneous glands and follicles. The agency of the omentum majus in the abdomen affords a good example of the use of the skin as a recrementitious organ. This important peritoneal apron has the power of insinuating itself between the folds of the intestines, and exuding copiously its oil to lubricate the peritoneal surfaces, and facilitate their vermicular movements. The synovial glands also fulfil an analogous office in the joints; in fact, throughout the interstices of the body, there exist these oily secretions; and Dr. Heberden very ingeniously endeavoured to explain the indisposition and inability to move observable in fever, by the arrest and deficiency of these secretions, which produce a mechanical impediment to the various evolutions of the body.

The Doctor appeared to maintain an idea that the waste of life may be diminished by the adoption of means to moderate the evaporation attendant upon perspiration, and suggested the propriety of imitating the practice of the ancients in the inunction of the body, which he was convinced was a practice attended with the best effects. The paper was concluded by a curious in-

quiry relative to the practice of anointing amongst the ancient eastern nations, and especially amongst the Hebrews. Oil was always the vehicle for perfumes before the discovery of spirits of wine. The adoption of this more elegant liquid as a menstruum for perfumes, and the general use of linen in modern times have led to the abandonment of the salubrious custom of anointing. The production was marked throughout by great quaintness of style, and excited a languid interest.

Some very good drawings illustrative of disease of stomach were exhibited. Amongst others we noticed sphacelus of the stomach succeeding carcinoma, enlargement of mucous follicles, hemorrhage from the villous coat, &c.

ROYAL INSTITUTION.

Friday, May 11, 1832.

SPARKS FROM MAGNETS.

Dr. Richie, professor of natural philosophy to the institution, this evening stated that he had followed in the track of Mr. Faraday in his late brilliant discoveries, and was happy to say he had uniformly arrived at the same conclusions. He had also succeeded in making the spark, which had been obtained by Mr. Faraday in breaking the magn-to-electric circle, visible to a large assembly. This was done by placing an explosive mixture of oxygen and hydrogen in the course of the spark, which immediately produced a loud report and a flash of light. He employed a horse-shoe magnet, between the ends of which were placed a couple of tubes; a wire was introduced into each, and their connexion maintained by a conducting medium. The wires were connected to the magnet by the folds of copper ribbon. The gas was introduced by a bladder and stopcock. The contact suddenly broke, and the spark was made evident by an explosion. Dr. Richie declared his belief that no spark could be elicited from any but a *temporary* magnet.

At this time Mr. Faraday came forward, and stated he had succeeded in obtaining a spark from a *natural* magnet. Mr. Faraday had borrowed Brown's magnet from the Academy at Woolwich. A small bar of iron, about six inches long, was used in contact with the extremities of the magnet. Two connecting wires were raised from each end of this small bar, and being bent at right angles, overlapped each other. The undermost terminated in a disc about the size of half-a-crown. By a rapid percussion of the bar against the magnet, the disc and wire broke in contact by their elasticity, and a beautiful blui-h spark was rendered evident amidst the merited applause of the spectators. During these transactions, as pretty a scene of philosophical coquetry was enacted between the two experimentalists as was ever exhibited on any stage. But the good-natured and discriminating audience would pardon that, and much more, in men of such transcendent merit as Richie and Faraday.

In the library there was nothing worthy of remark, except specimens of a petrified *jungle* of gum, and other trees from the New Hebrides.

Friday, May 18, 1832.

MR. FARADAY ON THE CRISPATIONS OF FLUIDS UPON VIBRATING SURFACES.

On former occasions the lecturer had exhibited experiments showing several various phenomena of vibrating surfaces, by means of sand and other heavy and light powders. With the aid of square glass plates and a violin bow, curious results were obtained. Sand being sprinkled over the surface of the piece of glass, and a certain note produced by the application of the bow against the edge, a certain arrangement of the particles took place, and a regular figure was delineated. These figures were found to vary according to the note produced. It was ascertained that the aggregation of the particles took place on the quiescent or nodal lines of the vibrating surface. An apparent exception to the general law was discovered, and was for some time inexplicable. When a light powder, that of *acopadium* for example, was used, the accumulation did not take place on the nodal points or lines, but on the vibratory ones. This phenomenon Mr. Faraday found to be due to certain atmospheric currents which were excited by the vibratory surface.

Mr. Wheatstone extended his inquiries into the nature of the effects which vibrations might produce on the surfaces of fluids, and he tried with oil, water transparent, and coloured albumen and mercury. The experiments were performed on a variety of scales, and a satisfactory uniformity was observed in the results. A symmetrical elevation of certain points of the surfaces took place when the vibration was transmitted to the fluid. Upon vigilant examination, the tumours, hills, or crispations of fluid, were always square, and were arranged in a checkered fashion, one-half alternately ascending and descending. The effect was most perfectly shown with albumen, and least so with oil. The size of these crispations varied with the height or

depth of the sound, for the baser the note, the larger the crispation with the albumen; the effect appeared like a fine web, formed with mathematical precision. From various experiments, Mr. Faraday thought he could establish as a principle, that all fluids were influenced by the same law, and that the intestine motion produced and evidenced by the agitation of the surface was dependent upon the conversion of the perpendicular impulse into a lateral one, so as to occasion the alternate and geometric tumefaction of the surface. This effect has no reference to the depth of the liquid employed.

After the lecture, Mr. Faraday exhibited a portrait of Baron Cuvier, by Pickersgill. He pronounced a eulogy upon that great philosopher and anatomist, who was an honorary member of the institution. Mr. Faraday also announced that the gold medal of the institution had been conferred this year on Gay Lussac for his late discoveries in chemistry.

THE LANCET.

London, Saturday, June 2nd, 1832.

THE papers which we publish this day on the effects produced in several desperate cases of cholera by the injection into the veins of water containing the salts of the blood in solution, will be read with the most lively interest and satisfaction.

From the conjoint testimony of the highly-respectable individuals who have conducted the various cases, it appears certain that of fifteen hopeless and abandoned cases, five were rescued from apparently certain death by the treatment adopted, while of those which proved fatal, all but one had been complicated with such extensive organic disease, that no method of medication could do more than postpone a little the fatal event. That reprieve the injection seems to have procured. In short, according to the evidence before us, the method has only failed in one case in which it had been fairly tried—that is, where no organic disease had pre-existed, and where enough of life was left to sanction the least anticipation of success.

The most startling fact connected with the details of the treatment is the great quantity of fluid injected. In one case, nearly 7 lbs. were at once thrown in to the median basilic vein, and in nine hours 15lbs. were infused. But in this very case—a desperate example of the last stage of a protracted attack of cholera, after excessive purging and vomiting had drained the body almost dry—when the pulse had been imperceptible for hours, the skin livid, and the voice lost, *the patient completely recovered*! While the injection was performing, the pulse rose, the heat returned, the lividity disappeared, the countenance became florid and beaming, in short the patient underwent a change more like the workings of a miraculous and supernatural agent, than the effect of the interposition of medical science.

The case thus alluded to is we think one of the most interesting recorded in the annals of our profession. It gives us at least this all-important inference, that the injection of water in these great quantities is not necessarily fatal or even a formidable measure. It further entitles us to presume, that as organic chemistry improves, as our knowledge of the relation between the blood and remedies of different kinds increases, the art of treating diseases in general will be placed on a more rational and certain foundation. It teaches us how boldly we may proceed when certain and scientific data are before us, and it thus dispels the all-but-cowardly timidity which has hitherto prevented the principles of the treatment in question from being carried into effect.

With respect to the quantity of water employed, two circumstances are to be borne in mind; first, that the opinions which rate the quantity of blood in the adult body at the mean of thirty-five pounds only, rest upon no sure or experimental facts; secondly, that the blood forms at most but a small proportion of the fluids which the body generally contains—which facilitate

all the movements, in the due perfection of which health and life are essentially concerned, which cannot be diminished without danger, and which cannot be lost without certain death. Now when we contemplate the phenomena of cholera, when we see the plump and vigorous limbs of youth and adolescence withered in a few hours to the shrunk dimensions of emaciated old age, it is impossible not to conclude that not only has the blood lost much of its water, as chemistry has so satisfactorily ascertained, but that all the living solids of the frame, its muscles, nerves, its vascular tunics, and its membranes, have been robbed of the bulk of fluid essential to the due discharge of their functions,—to the preservation of their vital condition. The quantity of water to be replaced is therefore immense, and bears no relation to the presumed quantity of blood which the human body naturally contains. The blood only participates in the general drainage. Unless we limit life to that fluid, unless we renounce the solidist pathology, and unless we overlook all the most obvious features of the disease in question, we cannot arrive at any other conclusion.

A rapid glance at the history of the administration of remedies by the veins may not at this momentbe destitute of value.

The truth of Harvey's doctrines had scarcely been admitted, when the wild enthusiasm of the disciples of the new physiology led them to believe that a path was now opened to the cure of all diseases. The cause of every malady was assigned to the blood. The cure was to be accomplished by substituting for the diseased fluid, blood drawn from a robust and healthy animal. Experiments were accordingly made on animals, and soon repeated upon man. Denys and Emerens, of Paris, were the first who dared the experiment and performed the *transfusion* of the blood of a calf into the veins of an idiot, who seemed to recover his reason. Various accidents, however, soon occurred to excite distrust in the practice, and the Parliament of France and the Sovereign Pontiff almost simultaneously issued edicts prohibiting its repetition. After a long period, however, Magendie demonstrated, by several most conclusive experiments, that transfusion of blood from an animal of the same species, is attended with no danger whatever. With what signal success Dr. Blundell, in this country, applied the principle to the treatment of uterine hemorrhage, it is needless for us to remark.

The idea of giving medicinal remedies by the veins is of comparatively modern date. Encouraged by Magendie's experiments on animals, Perey and Laurent injected, with success, the decoction of stramonium into the veins of a soldier affected with tetanus. M. Coindet, of Geneva, performed a similar operation with the solution of opium in an analogous case, and with instant advantage, so that the spasms which had resisted all other remedies immediately subsided, and the patient recovered. Several other cases of this description are on record, to which we need not more particularly allude. In the treatment of the diseases of animals, again, the practice was so extensively followed, that at the veterinary infirmary of Copenhagen, no other mode of administration of medicines was resorted to, it being found that injection by the veins rendered success more certain, and economized the consumption of drugs.

Previous to the proper experimental investigation of the chemical pathology of cholera, numerous speculations were made by different writers on its treatment by venous medication. In Germany transfusion of blood was tried by Scoutteten and Dieffenbach under the impression (founded on Hermann's erroneous statement) that the blood in cholera had lost its globular structure. The experiments failed remarkably, and one patient died almost instantly after the transfusion had been performed. Again,

several writers in England who had never witnessed the disease themselves, reasoning on the "blackness" of the blood so prominently described by the Indian and Russian authors, suggested different means of restoring that fluid to the bright and florid colour which they took for the test of its healthy condition. With this view, one proposed the injection of the oxygenated salts, another of the muriate of soda, both being solely intended to redden the blood, and having no reference to its state of fluidity.

At length Dr. O'Shaughnessy's experiments having shown the deficiency of water, and occasional diminution of the salts, in cholera blood—having proved that its anatomical structure was preserved, and its capacity for aëration maintained, a more rational principle of treatment was pointed out. It was a necessary inference from these experiments that water *essentially*, and salts *contingently*, should be added to the blood before it could again discharge its functions. It was evident, as stated in Dr. O'Shaughnessy's report of his experiments, that water could only be restored in two ways, by absorption or venous injection, and that in the cases in which the power of absorption was irretrievably lost, venous injection left the only hope of a cure. Dr. Latta, of Leith, has now, for the first time, carried this suggestion into effect. We thank him for the intrepidity, scientific zeal, and assiduity, he has displayed. His example has been followed by Drs. Craigie and Macintosh, of Edinburgh, and we entertain no doubt that the practice will be repeated all over Great Britain, as a last resource in the desperate cases which have baffled the ordinary methods of treatment, and which would otherwise be abandoned to inevitable death.

We append to the Leith and Edinburgh papers a note we have received from Dr. O'Shaughnessy, containing additional suggestions on the subject.

ST. BARTHOLOMEW'S HOSPITAL.

CANCEROUS BREAST.—EXTIRPATION.

Eliz. Bridnell, of a dark olive complexion, is a native of Buckinghamshire, her father being a black. She is forty-two years of age, and of a spare habit. Her general health has not been interfered with till about two years ago, when she first took cognizance of "something wroog" in her left breast, discovering there a small lump. This gradually increased to its present size, its growth being accompanied by pain, sometimes acute, but not generally distressing till very lately. The swelling is situated just beneath the nipple, and is moveable upon the subjacent muscle. Disease does not appear to involve the axillary glands, and the other mamma is unaffected. She is the mother of four children, all of whom have received their lacteal nutrition from herself, and the youngest, nine months old, was suckled by her at both breasts till within the last six weeks.

Operation being prescribed, and acceded to by the patient, was resorted to on Saturday last, Mr. Stanley officiating *vice* Mr. Vincent. The patient being in the recumbent position, two semilunar incisions were made in an oblique direction, embracing the nipple, and meeting at their extremities. An oval piece of integument being thus demarcated, the diseased structure was by a free dissection separated from the cellular substance, and from the fibres of the great pectoral muscle, which appeared not to be intermeddled with. During this process the long thoracic artery was divided, whilst a pretty copious effusion took place from the mammary branches. A ligature was applied, and a search then made for any remnants of the cancerous structure. Mr. S. took out a small remaining portion, and likewise a gland from the axilla, after which the edges were approximated, the wound was covered with strappings, surmounted by a simple dressing, and the patient removed from the operating table.

There was no retraction of the nipple, which appeared perfectly uninfluenced by the progress of the disease. A section of the tumour exhibited a clear development of the characteristic morbid appearances. There was the hard firm *nidus*, from which shot off the white bands forming the medium of connexion with the surrounding parts. The tumour was about the size of a hen's-egg.

27. Report very favourable. The wound is healing rapidly and the general health indicates a speedy recovery, unless there should recur one of those sudden reversions

which are so characteristic of these cases, and so often mock the efforts of the operator.

Three other operations were performed on the same day—two by Mr. Lawrence, for congenital cataract in two children, brothers; and the other by Mr. Lloyd, for the removal of an adipose tumour, of twelve months duration, from the shoulder of a girl. Of the *former* we say nothing, because we were in the same predicament as most of the class—that is, we could see nothing but *heads*.

The case of *nævus*, mentioned the week before last, is doing well. The morbid growth quickly mortified, and on Tuesday, 16th, Mr. Lawrence detached it from its adherence. The sloughing has caused a rather extensive wound, from the minute vessels of which, blood issues whenever the child cries violently. A poultice is applied.

CASE OF LEPRA VULGARIS.

Mary Young, ætat. 30, was admitted into this hospital in the beginning of April, under the care of Mr. Lawrence. Her case exhibited a well-marked specimen of *Lepra*. She states that she is a married woman, and the eruption first made its appearance six or seven months ago, when she had been suckling twin children. Her circumstances in life are comfortable; her constitution she considers naturally strong, but within the last five years a change for the worse has taken place in her health, which during that period has been constantly very delicate. Previous to her admission here, she had been attending Mr. Lawrence as a private patient; but entered this institution at his suggestion, that gentleman being desirous, no doubt, of trying the effect of the regularity and certainty of hospital life. When we first saw the patient (on April 21st), the eruption was existing over the whole body save the face, prevailing particularly on the arms and legs. The spots were of a circular form where isolated, but gradually became confluent, forming clusters, and losing the original characteristic. The interspace between the white squamæ had the usual shining blush. About the elbow the affection assumed a thick rugose appearance, corrugating the integuments upon any movement of the joint. There were also the small origins of fresh maculæ springing up. The treatment adopted had been light diet, *calomel* and *pil. aloes c. myrrha*, grs. x, every other night. She was ordered to use the warm-bath, and *Ung. hydrarg. nitrat. Ol. olivæ, Cerat. cetacei*, in equal parts, as a daily application to the affected spots.

25. No alteration in the state of the eruption. There is much constitutional derangement. The patient throws her head from side to side, complaining of heat, pain, and a sense of unusual fulness in the cerebral region; the pulse is not high or strong. Twenty leeches to be applied to the temples. *Mist. ammon. acet.* ʒiss, every four hours.

27. The leeches were used yesterday, and seem to have afforded great relief. Improvement is observable.

May 1. Relapse; troubled with much heaviness; pain in the head, and lowness of spirits. *Vin. antim.* ʒss to be added to the *mist. am. acet.*

2. Rather worse; pain in the chest; pulse very weak; slight shivering. *Spirit. æth. nitr.* ʒss. *tinct. amant.* ʒj. *mist. camph.* ʒx. The draught to be taken every four hours.

5. Some improvement; bowels open. *Pulv. Ipecac. comp.* grs. viij, to be taken every night.

11. To-day Mr. Lloyd saw the patient for Mr. Lawrence, and ordered a resumption of the warm-bath, which he found had been discontinued on the ground of its disagreeing with her. Ordered also *Liq. Ant. Tart.* ℳ xxx, *Magn. Sulph.* ʒss., *Mist. Salin.* ʒiss. A draught to be made and taken twice daily. For the *Ung. Hyd. Nitrat.*, the *Ung. Hyd. rubrum* is also substituted.

All this while the eruption has remained nearly stationary. Her health is now beginning to improve, but to-day, the 14th, fresh spots appear; some on the nose. She is to rub in on *one* arm the *Ung. picis liquid.*

This was followed up, and the diseased action appeared to give way in a day or two. The little squamæ fell off, and the skin became softer. Not much difference was apparent in the effects of the two applications, but the general health was uncommonly improved, appetite was regained, and the heavy look left the countenance.

22. To-day the patient left the hospital in a state of convalescence.

LONDON HOSPITAL.

NÆVUS MATERNUS.

On the 4th of May, a little child, about eighteen months old, was brought to this hospital with nævus maternus, situated on the forehead a little above the left superciliary ridge. The swelling is of a bluish colour, about one inch in diameter, and when the child cries violently, the tumour becomes very much swollen.

Mr. Scott performed the operation by ligature, in preference to the knife, in order to avoid troublesome hemorrhage. Speaking on the subject, he observed that he had known many instances in which the parents would not allow of excision by the knife, when they had no objection to the performance by ligature, because, in the latter case, the operation was bloodless. The mode Mr. Scott adopted was that of transfixing the tumour with two pins, as used in the operation for harelip, thus dividing the nævus into four portions, and then drawing a strong ligature as tightly as possible several times around the swelling, until the tumour became exceedingly tense, by this process entirely cutting off all supply of blood to the part. The patient did not appear to suffer very great pain during its performance, as its cries ceased almost directly it was restored to its mother's arms.

22. The child was brought to the hospital again to-day. The forehead now looks very well; the part has begun to cicatrise.

HYDROPS ARTICULI.

There is now a young woman in this hospital whose knee is affected with this disease.

The patient (F. M.) is 24 years of age; she attributes the origin of this disease to cold, caught by kneeling on damp bricks in her occupation as a servant. The disease first made its appearance four months previous to her admission here, with pain in the joint, and weakness, followed by swelling, for which the only remedy she used was rubbing it with soap liniment. After a time she applied to a medical man who prescribed a blister to the knee, with continued rest, and gave her a letter of admission here. Her general health has always been pretty good; catamenia regular.

The appearances which the part presented on her admission (about four weeks since) were,—joint very much distended, the enlargement principally on the fore-part and sides, extending some distance up the thigh; the tumour soft, elastic, giving way to pressure, but the indentation filled up instantly on that being removed; fluctuation very distinct. When the limb is in the straight position, the enlargement appears to be principally on the inner side of the joint. When the knee is bent, the fluctuation is not so evident, as the swelling is then of course tense. There is no very considerable impediment to the motions of the joint.

The treatment adopted on her admission was, blisters to the knee, and the blistered surface dressed with the unguent. hydriodat. potassæ. Took *tinct. ferri concentrat.* ℳℵ, *ter die*, which did not appear to be of much benefit, and consequently was discontinued. The knee was then dressed with *unguentum hydr. c. camphora*, spread thickly on lint; next, strips of adhesive plaster, over which the *emplast. saponis*, spread on leather, thin rolled; after which, pasteboard splints, and over the whole another roller. With this plan of treatment the fluid has been in a great measure absorbed.

22. The knee was dressed again to-day in the same manner, omitting the pasteboard splints. The swelling is materially reduced, the knee being now nearly of the same size as the other, fluctuation much less distinct, and the patient shortly intends asking permission to leave the hospital.

Mr. Thackrah, of Leeds, is preparing a new and enlarged edition of his work on employments as affecting health and longevity, extending the subject of his inquiry to the general arts, trades, and professions of England. His first treatise had a particular reference to the employments of a clothing district only.

CORRESPONDENTS, &c.

The M.S. List forwarded by *XX* was at variance with a printed list which we also received, and being unable to decide which was correct, we published neither. If we receive another list from XX, it must be written in the clearest manner. He may receive both on application at the Office.

The "brief statement" will not read well in print.

ERRATA.

We are requested to make the following erratum in Dr. O'Shaughnessy's paper on the Chemical Pathology of Cholera:—

In page 226, 2nd column, 3rd table, *for*

	No. 1.	No. 3.
Water	8.54	8.66
Albumen	1.33	1. 24
Salts	5.80	2.92
Urea	40.—	— —
Fatty matter.....	1.43	1. 28

Read

	No. 1.	No. 3.
Water	854.—	866.—
Albumen	133.—	124.—
Salts.....	5.80	2.92
Urea	— 40	— —
Fatty matter	1.43	1. 28

In Mr. Salmon's lecture, page 241, col. 2, line 2, *for* "*consistent* with birth," read "*coexistent* with birth." Line 6, *for* "resembles *his* parents," read "resembles *its* parents." Lines 11 and 12,—in the sentence "the same similarity may occur internally, *and* is visible externally," *for and* substitute *as*.